COSUMNES POWER PLANT (01-AFC-19)

DATA RESPONSE, SET 1A

Submitted by

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

JANUARY 9, 2002

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

Technical Area: Alternatives
CEC Authors: Negar Vahidi and Jacob Hawkins
CPP Authors: John Carrier and KatyCarrasco

BACKGROUND

California Environmental Quality Act (CEQA) Guidelines (§15126.6) require environmental impact reports to analyze alternatives to the proposed projects. The Energy Commission power plant siting process is a CEQA equivalent process and must also analyze alternatives to the proposed project.

Section 9 of the Application for Certification (AFC) discusses a "no project" alternative as well as alternative sites to the proposed project.

DATA REQUEST

1. Pursuant to the CEQA Guidelines, provide a detailed "no project" analysis. Include an analysis that compares the potential environmentalimpacts (for all technical subject areas such as agriculture, water resources, geology, etc.) between the proposed project and the "no project" alternative (i.e., a reasonably foreseeable scenario of future uses of the proposed project site). The project site's land use and zoning designations should be considered when determining a reasonably foreseeable scenario.

   Response: See Attachment Alt-1 for a more detailed No Project analysis.

BACKGROUND

AFC Sections 9.2.2.2.2 and 9.2.2.2.3 state that Alternative Sites 2 and 3 are too small to support the proposed facility. However, Alternative Site 1 is of sufficient size for the proposed facility.

DATA REQUEST

2. Provide a separate figure clearly illustrating the Alternative Site 1 (Carson Ice-Gen Facility) and how it would be served with water, natural gas, and transmission lines.

   Response: Figure Alt-2 identifies the general area proposed for Alternative Site 1. However, based on conversations with the Sacramento Regional Wastewater Treatment Plant (SRWTP) representatives (see Attachment Alt-2), there is no room at the SRWTP for another power facility such as CPP.

3. According to Section 9.2.2.2.1 (page 9-3) of the AFC, Alternative Site 1 is zoned Open Space. However, in Section 9.2.2.3.4 (page 9-5) the AFC states "…zoned land uses for the alternative sites are industrial…" Please clarify the correct zoning for Alternative Site 1.

   Response: As shown in Data Response Alt-5, Alternative Site 1 is zoned Public/Utilities and is designated in the General Plan as Public/Quasi-public.

The other two alternative sites (Procter & Gamble and Campbell Soup) are correctly identified as Industrial.

4. It is difficult to determine Alternative Site 1's proximity to residential and sensitive receptors based on Figure 9.2-1. According to page 9-6 of the AFC, the alternative sites would potentially affect more people since there are more residential land uses and other sensitive receptors. Please provide a map and/or information that supports this statement for Alternative Site 1.

   Response: The Carson Ice-Gen power plant (Alternative Site 1) is located at the Sacramento Regional Wastewater Treatment Plant. Because of the nature of the WWTP, there is substantial buffer land surrounding it. However, the closest residential development is located about 0.9 mile away along Franklin Boulevard. By comparison, the closest residential development (at a much lower density) is more than a mile west of the CPP site on the south side of East Clay Road, along Kirkwood Road.

5. For areas within a 1-mile radius of Alternative Site 1, provide a color map illustrating each of the following: general plan land use designations, zoning ordinance designations, and existing land use types.

   Response: Figure Alt-5a shows the general plan land use designations for the 1-mile area surrounding Alternative Site 1. Figure Alt-5b shows the zoning ordinance designations for the 1-mile area. Existing land use is vacant open space except for the residential areas to the west of Franklin Blvd. and south of Dwight Road.

BACKGROUND

The SMUD owned property at Rancho Seco is a 2,480-acre site. Approximately 30 acres would be required for the proposed project.

DATA REQUEST

6. Describe how the proposed 30 acres of the 2,480 acres were selected as the proposed site, and if there are other alternative sites within the 2,480-acre area that would feasibly accommodate the proposed project

   Response: The Applicant had numerous considerations and criteria in determining the best location for the plant within SMUD's 2,480-acre area. This included siting criteria used by the California Energy Commission, but also additional criteria, among them: conforming with Sacramento County land use ordinances; biological impact avoidance for special status species, impact avoidance for existing water features such as ephemeral swales, streams, and vernal pools; avoidance of potential culturally sensitive features; avoidance of the vernal pool conservation easement area; proximity to roadways, property boundaries and nearby property owners; impact avoidance of Rancho Seco Park, campground, and visitor traffic; impact

avoidance of the wildlife refuge (Performing Animals Welfare Society); proximity to existing features and re-usable equipment at the closed Rancho Seco Plant, including the switchyard and water supply pipeline; impact avoidance of the photovoltaic generation area and potential expansion of the photovoltaic area; impact avoidance of leased farmland and caretaker housing within the property and at Rancho Seco Park; proximity to the dry nuclear fuel storage area and impact avoidance of Rancho Seco decommissioning activities; suitable access to the proposed site for construction, operation, and emergencies; avoidance of low ground and FEMA mapped flood areas; proximity to a suitable discharge point for cooling water; visual impact avoidance to travelers along SR 104, community residents, and visitors to Rancho Seco Park; and space for a suitable laydown area resulting in minimum environmental impact.

After reviewing all of the above considerations and criteria, the parcel of land chosen for the site collectively had the least environmental impact and avoided sensitive areas, and was closest to existing Rancho Seco infrastructure. By reducing the distance to the existing Rancho Seco features, yet being far enough to avoid impacting decommissioning activities, SMUD was able to minimize the length of linear connections such as raw water piping, transmission lines and water discharge piping, and therefore, reduce environmental impacts. There were no other parcels, by a wide margin, that would feasibly accommodate the proposed project and be proximate to re-usable equipment and features of the Rancho Seco Plant. Although there is a large grassy plateau east of Rancho Seco Plant, it supports hundreds of vernal pools in a nearly natural state. In pre-consultation with the US Fish & Wildlife Service in March 2001, development of that area was strongly discouraged.

Attachment Alt-1
No Project Alternative

1.0 DESCRIPTION OF "NO PROJECT" ALTERNATIVE

If the "No Project" alternative is selected, the District would not receive authorization to construct and operate a new power generation facility. As a result, the proposed facility would not be developed at this time and would remain at least temporarily as annual grassland pasture. Subsequently, energy that would have been produced by the proposed facility would need to be generated by another available source; common available sources include older power generation facilities that consume more natural gas and release greater quantities of air pollutants. In addition, under this alternative, the District's customers and the people of California would have less total generating capacity and, therefore, a less reliable and less competitive electric system.

The purpose of this generating facility is to provide a source of clean, reliable energy for the Sacramento area and the District's customers. It also intends to put to use that land and infrastructure that was originally developed by the District for the purpose of generating most of the region's energy needs. With CPP, the District is responsible to the ratepayers to avoid financial risks of project failure.

The "No Project" alternative is not considered feasible because it neither meets the objectives of providing power nor does it meet the District's business plans to rely less upon the purchase of power from outside the District.

2.0 Environmental Analysis of No Project Alternative

This section provides a brief environmental analysis of the No Project Alternative.

2.1 AIR QUALITY

With the No Project Alternative, air quality in the Sacramento Metropolitan Air Quality Management District (SMAQMD) would be slightly worse that with the project since their would be no permanent reduction in air pollutants resulting from the purchase of emission reduction credits. Electricity required to support growth within the District's boundaries would be provided under contracts from other power generating sources outside the District. Therefore, it is likely that older plants that create more air pollution than the proposed CPP would remain online. Thus, overall the air quality would be slightly worse than if the CPP plant is not built.

2.2 BIOLOGICAL RESOURCES

Habitat types potentially affected in the project area comprise agricultural, annual grassland, vernal pools, ephemeral streams and irrigation ditches, riparian shrub, and landscape and urban communities. See AFC Figure 8.2-1 for location of biologically

sensitive resources in the project area. A description of these resources is found in AFC Section 8.2.3.2.

With the No Project Alternative, the project site would remain as cattle pasture and no additional biological impacts would occur.

2.3 CULTURAL RESOURCES

With the No Project Alternative, there would be no impact to archeological or historic resources along the gas line or at the project site since the project construction would not occur and the potential to disturb cultural resources would not exist.

2.4 LAND USE

The proposed project is part of 2,480 acres purchased by the District in the 1960s to establish Rancho Seco Plant (RSP). The area affected by the proposed CPP project is leased by the District for cattle grazing for weed control. No crops, irrigation, or special cultivation are conducted on the project site. Within the vicinity of the project site, row crops and vineyards are cultivated. The land use designation for the site is Public/Quasi-Public with a Resource Conservation overlay. The Resource Conservation overlay pertains to potential, but uninvestigated natural resources based on information available to the Sacramento County Planning Department. The designation does not necessarily restrict the land use for the area included in the overlay. The site is zoned as AG-80, which is compatible with the land use designation. Also included on the property are areas set aside for a wildlife refuge and a permanent conservation easement area used for mitigating sensitive habitat.

Over the years, other power generating sources have been established on the property. Approximately 40 acres is currently used for four photovoltaic farms, which produce about 5.5 MW of energy. Long-term management of RSP is planned to occur in the next several years and includes off-site disposal of the spent fuels in accordance with NRC requirements.

SMUD intends to further develop the approximately 2,000-acre property consistent with its Public/Quasi-Public status. A recreational area surrounds the man-made Rancho Seco Reservoir, which was established for Rancho Seco Plant's emergency water supply. Periodically, the District reviews proposals for commercial uses for the remainder of the property compatible with existing and planned land uses. The only current development of the area is for the expansion of the District's photovoltaic farm. No other future plans have been identified. Since any proposals for future development would be consistent with existing and planned uses, the no project alternative would have no adverse Land Use impacts.

2.5 NOISE

The proposed project is part of 2,480 acres purchased by the District in the 1960s to establish Rancho Seco Plant. Over the years, other power generating sources have been established on the property. Noise-sensitive land uses closest to the site are primarily isolated residential buildings located in farmlands surrounding the site. The property line of the closest sensitive receptor is located approximately 200 feet southwest of the site. The nearest residence on this property is approximately 800 feet from the site.

Sources of environmental noise in the vicinity of the site primarily include vehicular traffic and noise associated with the Rancho Seco Plant. Ambient noise surveys of the area indicated an average nighttime ambient noise level of 39 dBA (see AFC Section 8.5.3.2). With the No Project Alternative, further development of the photovoltaic farm would only produce slight construction noise during daytime hours and due to its distance to the residential receptors, would have no impact on ambient noise levels. Noise impacts to the closest resident would be avoided with the No Project Alternative.

2.6 PUBLIC HEALTH

No existing recreational, scenic, natural resource protection, natural resource extraction, educational, or religious land uses exist within one mile of the project site. The project site is approximately 1.2 miles west of Rancho Seco Park, which is owned and operated by the District. Rancho Seco's Park's recreational facilities include fishing, boating, swimming, and camping. No other recreational facilities exist in the vicinity of the project site. According to the Sacramento County General Plan (1993), no additional recreational or park facilities are planned for the area. There are no sensitive receptor facilities (such as schools, daycare facilities, convalescent centers, or hospitals) in the vicinity of the project site. A few residences (primarily farmers) are located in the vicinity of the site, and a sparsely populated residential area begins approximately 0.75 mile to the west. There are no sensitive receptors within a 3-mile radius of the project site. Consequently, there would be no Public Health impacts from the No Project Alternative.

2.7 WORKER HEALTH AND SAFETY

Under the No Project Alternative, there would be no construction and no impacts to workers. The only planned construction is the existing expansion of the photovoltaic farm. The workers on that project are required to follow the District's safety procedures.

2.8 SOCIOECONOMICS

With the No Project Alternative, no economic development benefits would be realized within the Region of Influence (i.e., Sacramento and San Joaquin counties). During construction, the region would not receive the benefits of a $60 million construction payroll or the $16 to $20 million in local purchases for materials and supplies. It would also forgo the creation of 38 direct jobs and 555 induced jobs, which would have a direct

and induced impact of more that $1 million (direct) and $14.8 million (induced). In addition, the state and region would forgo between $1.2 to $1.5 million in sales tax revenue. Since workers are expected to come from the local workforce, there would be no impacts to schools, housing, public services or utilities with or without the project.

During operations, the region would not receive the benefit of an annual operations and maintenance budget estimated to range from $8 million to $10 million. Of that amount, approximately $5 million is anticipated to be spent locally. The operations payroll is projected to be approximately $1.25 million. Estimated indirect and induced employment within the two-county region would be 25 and 18 permanent jobs, respectively. Indirect and induced income impacts are estimated at $1,026,893 and $488,055, respectively. Based on the annual operations and maintenance budgets, the state and local governments would not receive an estimated annual sales taxes of approximately $375,000. Since the District is a municipal entity, it does not pay property taxes, so Sacramento County would not derive any additional funds from property taxes, with our without the project. Since the workforce is small, there would be no impacts to schools, housing, public services or utilities with or without the project.

2.9 AGRICULTURE AND SOILS

The types of land use surrounding the project site are described and mapped in AFC Section 8.4, Land Use. Currently, the project site and surrounding area are used for agricultural purposes, primarily grazing, which is consistent with the farmland classification. No prime farmland on the project site or adjacent areas would be lost due to construction and operation of CPP. Under the No Project Alternative, approximately 30 acres of grazing land would be retained for grazing.

Typical agricultural uses along the pipeline corridor include vineyards, pasture (grazing land) and row crops. Construction, consisting of trenching or horizontal directional drilling would be followed by restoration of the natural contours, soil replacement, and revegetation where appropriate. In areas where agricultural land is crossed, the land would be restored to agricultural production after pipeline installation. Therefore, under the No Project Alternative, only short-term impacts to agricultural land along the gasline would be avoided.

2.10 TRAFFIC AND TRANSPORTATION

Clay East Road borders the project site to the south. Twin Cities Road (SR 104) is the closest road to the north and west of the project site. Two state highways serve the project area, SR 104 and Highway 99. The No Project Alternative would avoid an estimated 590 peak vehicle trips per day along these affected roadways during the construction period. The No Project Alternative would avoid the reduction in level-of-service from A to B along SR 104 and would avoid potential traffic impacts to the residential area west of the project along Clay East Road.

2.11 VISUAL RESOURCES

The project site is located within a regional landscape characterized by a nuclear power plant, rolling hills, vineyards, cattle grazing land, open space, and rural residences. Portions of the site is developed for RSP, a photovoltaic facility, and Rancho Seco Park. Facilities at the RSP, just north of the project site, include: two 426-foot-high parabolic cooling towers, a 160-foot-high reactor building, a 60-foot-high auxiliary building, a 40-foot-high turbine building, and a 70-foot-tall training and records building. Although RSP is being decommissioned, it is still lit at night, at approximately 75 percent of its operational lighting. The existing Rancho Seco buildings and structures will not be removed as part of decommissioning activities, but will remain a part of the landscape.

The No Project Alternative would avoid visual impacts from the development of the CPP project on a 30-acre site. Since the number of near-field receptors is small, and the existing RSP and facilities already dominate the landscape, the visual impacts from the plant are not expected to be significant. Other current activities on the District property would continue such as the further enhancement of the photovoltaic farm, which replaces the grassland with photovoltaic cells.

2.12 HAZARDOUS MATERIALS HANDLING

The No Project Alternative would avoid the transportation, use and storage of hazardous materials on the CPP site during construction and operations, as the site would remain as grazing land.

2.13 WASTE MANAGEMENT

Since construction of RSP, and the subsequent decommissioning of the facility, the site has been fenced and protected as a buffer area to the facility, with no public uses. The District has leased the property for cattle grazing to control vegetation growth. Sometime prior to the 1960s, there was an old mining operation approximately 0.25 mile east of the project site. Mine tailings, consisting of evident low mounds of gravel, have become heavily overgrown with vegetation. Neither the project or the No Project Alternative would affect the mine tailings.

The No Project Alternative would eliminate the need to dispose of liquid and solid waste from the construction and operation of CPP. It is estimated that the CPP project would generate about 335 tons of solid waste during construction and 85 tons per year during operation, including up to 5 tons of hazardous waste. The loss of this waste stream would have an insignificant impact on the County's landfills.

2.14 WATER RESOURCES

The Folsom-South Canal and Rancho Seco Reservoir are the major surface water features in the vicinity. Water from the canal is used to maintain water levels in the Reservoir as well as for cooling RSP before discharge to Clay Creek. The District has a

contract to purchase water from the US Bureau of Reclamation (Bureau), to provide a maximum entitlement of 60,000 acre-feet per year (AFY) of CVP water and 15,000 acre-feet of non-CVP water assigned to the District by the City of Sacramento. Because the Rancho Seco Plant has been decommissioned, the District has never used the maximum entitlement under this contract.

The No Project Alternative would avoid the use of approximately 8,000 AFY of non-treated surface water from the Folsom-South Canal. The failure of the District to use its water rights for a beneficial use may result in the loss of those rights. A reduction in the use of 8,000 AFY to the Central Valley Project would represents less than 0.0009 (0.09 percent) of the 9 million acre feet allocated by the CVP, and about 0.013 (1.3 percent) of the water used for municipal and industrial purposes. The availability of additional water under the No Project Alternative would have a slight, but insignificant, benefit to the CVP.

2. 15 GEOLOGIC HAZARDS AND RESOURCES

The No Project Alternative would not affect geological hazards or resources. Under the No Project Alternative, the only construction would be planned expansion of the photovoltaic farm, which is being constructed to meet Seismic Zone 3 requirements of the Building Code.

2.16 PALEONTOLOGICAL RESOURCES

Although no fossils are known to directly underlie the proposed project site, the presence of fossil sites in alluvial deposits of the Laguna, Riverbank, and Modesto formation elsewhere suggests that there is a high potential for additional similar fossil remains to be uncovered by excavations in these formations during project construction. The No Project Alternative would avoid any disturbance to these formations as a result of plant or pipeline construction since the only construction would be the planned expansion of the photovoltaic farm.

Attachment Alt-2

SACRAMENTO MUNICIPAL UTILITY DISTRICT

MEMORANDUM

DATE: January 7, 2002
CPP 02-001

TO: File

FROM: Kevin Hudson

SUBJECT: Phone Record of Conversation with Prabhakar Somavarapu at the Sacramento Regional Wastewater Treatment Plant

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I spoke with Prabhakar Somavarapu, Civil Engineer for the Sacramento Regional Wastewater Treatment Plant. I inquired if there was space on County property at SRWTP to locate a power plant requiring approximately 30 acres. He said that space is definitely not available contiguous to the existing Carson Ice-Gen Plant. When I asked if there was other space available on the County's property, he said that eventual buildout of the treatment plant over 900 acres will require use of the remaining development space for treatment activities. Prabhakar said that the remaining buffer zone is designated as wildlife habitat/refuge, and development could not take place in those areas. The current rate of effluent is 400 MGD, and eventual buildout of SRWTP is 800 MGD. Eventual buildout will require space for biosolids fields, settling ponds, interceptor pipes, and interconnecting piping.

cc: John Carrier (CH2M HILL)
Chron File

INSERT Figure Alt-2, Location of Alternative Site 1

INSERT Figures Alt-5a and Alt-5b

Technical Area: Biological Resources
CEC Authors: Melinda Dorin and Rick York
CPP Author: EJ Koford

BACKGROUND

In AFC Section 8.2, Biology and 8.14, Water Resources, Clay Creek and the tributaries to Clay Creek are briefly described. The sections state that Clay Creek via Laguna Creek is a tributary to the Cosumnes River, and that the Cosumnes River contains anadramous fish species. In addition, Appendix 8.2B of the AFC contains a letter from NMFS that contains LORS information and a summary of conservation measures, yet the Magnuson-Stevens Act is not listed in Table 8.2-1, no fish species are listed in Table 8.2-4, nor is the National Marine Fisheries Service (NMFS) listed as a contact in Table 8.2-5.

DATA REQUEST

7. Please provide more detail (e.g., habitat types, spawning areas, jurisdictional wetland areas) about the biological resources and fish species found in Clay Creek and discuss the likelihood of anadramous fishes using that stream channel as habitat.

   Response: This question will be responded to on February 4, 2002.

8. Please provide a schedule for when the Biological Assessment will be submitted to NMFS, an estimate of how long consultation may take, and when a draft and final Biological Opinion from NMFS will be provided to the Energy Commission staff. Provide a record of communication with the agency person assigned to the project.

   Response: Formal consultation would not be initiated by SMUD, but rather the lead federal agency considering a permit. SMUD provided an initial informal letter to NMFS about the project on June 5, 2001 and received a response August 24, 2001 (Appendix 8.2 of AFC). Subsequently, SMUD consultants spoke with Ms. Madelyn Martinez of NMFS to discuss schedule and process (ROC Attached in Attachment BR-8.) The request for consultation from a federal agency would either come as a request of the EPA as the lead agency requesting the NPDES permit, or the ACOE as lead agency for a Section 404 permit. The expected schedule for filing these applications and subsequent consultation is outlined in Table BR-8, below:

TABLE BR-8
Anticipated Consultation Schedule

Submit NPDES application	January 15, 2002
RWQCB/EPA/ACOE initiate consultation with NMFS	January 31,2002
Applicant Prepares Biological Assessment	February 15, 2002
NMFS Submits Biological Opinion.	May 15, 2002
RWQCB/EPA/ACOE initiate consultation with USFWS	January 31, 2002
Prepare Biological Assessment USFWS	February 27, 2002
USFWS Submits Biological Opinion.	July 15, 2002

9. Please provide the temperature and total dissolved solids limitations for any threatened and endangered species that may be in the receiving waters.

   Response: This question will be responded to on January 18, 2002.

BACKGROUND

In AFC Section 8.14.4.1, page 8.14-17 and Appendix 8.14A, the discharge of the circulating water system blowdown into Clay Creek is described. It also states that water quality will meet the requirements of the NPDES permit that will be issued.

DATA REQUEST

10. Provide information on whether the blowdown water will be discharged continuously throughout the day, month, and year, and what the rate of flow of the discharge would be when occurring.

    Response: Blowdown is discharged continuously, and varies relatively little throughout the day, month and year. The rate of flow is shown in Figure 2.2-6: average flow of 1,629 gpm.

11. Provide monthly average water temperatures in Clay Creek and the anticipated temperature of the blowdown water.

    Response: Average water temperatures in Clay Creek were monitored as part of the RSP NPDES permit. For year 2000, monthly temperatures are reported below in Table BR-11. The RWQCB will generally require that an NPDES discharger meet a $\pm$5 degree requirement for discharge. Therefore, the discharge temperatures would be constrained to no more than 5 degrees above the temperatures listed here, or as exist during discharges.

TABLE BR-11
Monthly Average Temperatures of Clay Creek, (Based on Year 2000)

Month	Temperature (°F)
January	52
February	55
March	55
April	68
May	67
June	72
July	75
August	82
September	75
October	68
November	61
December	54

12. Provide a map showing the location of the proposed outfall, and describe the habitat within the immediate area of the outfall. Identify other discharges into Clay Creek for the entire section upstream of the project site to the conjunction of Clay Creek with Hadselville Creek downstream of the site.

    Response: This question will be responded to on February 4, 2002.

13. Provide rate of flow information for Clay Creek. Describe how adding the blowdown water discharge may change the hydrology of the creek and how that may effect the biological resources of Clay Creek.

    Response: The rate of flow in Clay Creek at the RSP outfall and as predicted with the additional flow from CPP are shown in Table BR-13, below for Year 2000. The low during this time ranged 8 to 15 cfs. With the project, flows are anticipated to range from approximately 11 to 18 cfs. It is reported that during active operation, RSP discharged approximately 27 cfs during operations. In 1996, when RSP renewed their NPDES permit, average and maximum flows were estimated at 11.9 and 21. 4 cfs respectively. Clay Creek is an incised channel that previously carried higher flows than presently, and therefore, no significant hydrological changes are anticipated that would adversely affect biological resources of the creek.

TABLE BR-13
CPP: Discharges from Rancho Seco Plant (in cfs)

	Average	Maximum	Minimum
Jan	12.39	12.82	11.82
Feb	13.96	14.42	13.67
Mar	13.07	14.24	12.11
Apr	12.87	15	11.63
May	12.97	13.94	11.01
June	9.41	12.65	5.94
Jul	11.52	12.84	9.51
Aug	10.76	13.39	8.06
Sep	11.75	14.73	10.29
Oct	10.68	14.56	9.72
Nov	10.94	13.38	9.37
Dec	12.06	12.76	11.32
RSP Discharges, Plus 3.6 cfs from CPP			
Jan	15.99	16.42	15.42
Feb	17.56	18.02	17.27
Mar	16.67	17.84	15.71
Apr	16.47	18.6	15.23
May	16.57	17.54	14.61
June	13.01	16.25	9.54
Jul	15.12	16.44	13.11
Aug	14.36	16.99	11.66
Sep	15.35	18.33	13.89
Oct	14.28	18.16	13.32
Nov	14.54	16.98	12.97
Dec	15.66	16.36	14.92

14. Provide an analysis of the anticipated percentage of the overall volume of water in Clay Creek that the discharge would be on a month-by-month basis.

Response: An estimate of the percentage of the overall water volume discharged to Clay Creek by month is provided in Table BR-14.

TABLE BR-14
Percentage of total flow in Clay Creek made up by CPP

Month	Percentage of Total Flow
Jan	29.1%
Feb	25.8%
Mar	27.5%
Apr	28.0%
May	27.8%
June	38.3%
Jul	31.3%
Aug	33.5%
Sep	30.6%
Oct	33.7%
Nov	32.9%
Dec	29.9%

BACKGROUND

Table 8.2-4 on page 8.2-35 describes a 1.5-acre storm water detention pond. The location of the pond is not mapped in the figures, although it is proposed to be located north of the project site.

DATA REQUEST

15. Provide a figure of the location of the 1.5-acre storm water detention pond.

    Response: The stormwater detention pond is shown on Figure 8.14-4 of the AFC.

BACKGROUND

A proposed table of contents of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) is supplied in Appendix 8.2D. In the proposed outline Section 4.4, Wetland Protections, there are subsections that do not correspond to that heading, i.e. Sections 4.4.6 through 4.4.8.

DATA REQUEST

16. Please provide a draft BRMIMP with the following additional sections and include any information in the sections such as impact avoidance measures and proposed mitigation where appropriate.

    - Regional Setting describing all habitats that may be impacted;
    - Biological Resources to be impacted (by species);

- Construction schedule;
- Under the existing heading for Mitigation Measures for Sensitive Biological Resources, include subsections that address the proposed species specific mitigation and avoidance measures, for species such as (but not limited to) Swainson's hawks, Western burrowing owls, and anadramous fish species.
- Habitat compensation measures to mitigate for habitat loss;
- Move the Habitat Revegetation Plan (4.4.8) to a separate section;
- Add a section for pre-construction and post-construction aerial photos of the project area at a 1" to 100' scale; and
- Agency agreements and permits.

Response: This question will be responded to on February 4, 2002.

BACKGROUND

Appendix 8G of the AFC contains the CNDDB printouts dated 6/18/2001 with the locations of sensitive species near the site.

DATA REQUEST

17. Provide copies of the CNDDB forms that were filled out during biological surveys conducted in 2000 and 2001.

    Response: Ellyn Davis Associates reports that no CNDDB forms were filled out during field surveys conducted in 2000 and 2001.

BACKGROUND

There are three drainages in the project site that the applicant proposes to reroute. There also may be impacts to Clay Creek, vernal pools along the transmission line corridor (AFC Section 8.2.5), and wetlands along the proposed natural gas pipeline route (AFC Table 8.14-8). AFC Section 8.2.3.2 states that wetland delineations of the project area were completed in April 2000. Wetland areas were depicted in AFC Figures 8.2-1 and 8.2-1R very generally and on a regional scale. USFWS guidance on vernal pools states that indirect and direct impacts are likely to occur when any project is within 250 feet of a vernal pool. Staff does not have enough information to make a final determination on whether direct or indirect impacts may occur to the vernal pools during the construction and maintenance of the transmission towers, gas pipeline, project site, construction laydown area, and water pipeline.

DATA REQUESTS

18. Please provide the wetland delineation surveys that were completed of the site, the construction laydown area, and along all the linear facilities. Include a figure with the delineation points mapped, the wetland delineation data sheets that were completed, a timeline for when the wetland delineation will be submitted to the Army Corps of Engineers for jurisdictional wetland

classification, and a discussion of when they expect to initiate consultation with the USFWS.

Response: This question will be responded to on June 7, 2002.

19. Provide a figure (or aerial photos) with a scale of 1" = 100' outlining the vernal pools and where jurisdictional wetlands occur within 250 feet of the site, the construction laydown area, and along all the linear facilities.

    Response: This question will be responded to on March 29, 2002.

20. Provide a table that estimates the amount of wetland habitat that may be directly or indirectly impacted within the 250-foot buffer.

    Response: This question will be responded to on March 29, 2002.

BACKGROUND

Table 8.2-4 summarizes the permanent and temporary project impacts to biological resources at the site. On AFC page 8.2-14 it states that the proposed 20-acre construction laydown area on the south side of Clay Station East Road has not been evaluated for the potential presence of vernal pools and special-status species. In the AFC the proposed construction laydown area is considered to have a temporary impact.

DATA REQUESTS

21. Provide the timeline for when the proposed laydown area would be initially graded, whether it will be graveled, when the area will be revegetated and how long after the revegetation the restoration will be considered complete.

    Response: The laydown area would be graded and graveled within 30 days after authorization for construction. The site would be graveled.
    The area would be revegetated within 60 days after construction laydown uses are completed. Revegetation would consist of restoring pre-construction topography, skimming off the gravel, restoring salvaged topsoil and seeding with a crop of winter barley. This will hold soil and allow local vegetation to recolonize the site. We expect the site to be "complete" 24 months from seeding.

22. Provide a draft of the laydown area restoration and revegetation plan.

    Response: This question will be responded to on February 20, 2002.

23. Provide information on how the stream channel (that is seen on the aerial photo submitted during data adequacy review), that runs North-South through the proposed laydown area, may be impacted by grading and describe anticipated changes to the hydrology of the area.

    Response: There are two shallow swales near the east and west sides of the proposed laydown areas. The swale to the east is shallow, ephemerally dry and may or may not qualify as a jurisdictional wetland. The swale to the west appears to carry more flow and is likely a wetland.

The eastern swale is the same as that that would be re-routed on the north side of Clay East Road by CPP construction. The laydown area would fill and culvert this swale on the south side of Clay East Road, or if the ACOE suggests it, re-route the swale to the east around the end of the construction area to align more directly with downstream flow. In either case, the swale would be filled according to the terms of an ACOE Section 404 permit. Hydrology would change only in that the swale would be approximately 50 yards further east than presently. It is anticipated that in as little as 5 years naturally occurring vegetation would re-establish in the new swale and function equivalently to the existing swales.

24. Identify who did the surveys, methods used, biologist qualifications, dates surveys were completed, field survey results, and any sensitive habitats and sensitive species occurrences found on or near the proposed laydown area.

Response: The laydown area is adjacent to the project site, so large and mobile species such as raptors, coyotes, horned larks, California hare would be easily visible from the site. The laydown area was walked in a meandering reconnaissance survey by EJ Koford April 21, and December 22, 2001. Results of the surveys were that habitat was very similar to that on the project site. There are ephemeral swales, but no vernal pools present. No sensitive species were observed, but the same species that could potentially appear on the project site could wander across the laydown areas. Mr. Koford's qualifications are provided in Appendix 8.2 of the AFC.

BACKGROUND

AFC page 8.2-7 states that 16 special-status animals potentially occur in the project area. The section then briefly describes 11 of them and Table 8.2.3 (pages 8.2-30 to 8.2-34) lists 17 special-status animal species.

DATA REQUESTS

25. Please clarify which special-status species may be present within 1 mile of the project site, including the construction laydown area, and within 1000 feet of all project linears.

Response: Because the proposed gas pipeline is so long (26 miles) and crosses a wide variety of habitats, we believe it is prudent to consider any of the special status species in Table 8.2-3 could potentially occur within 1,000 feet of the pipeline. Species that could occur within 1 mile of the CPP plant site are essentially those species in Table 8.2-3 that are highly mobile (Coopers hawk) or species that occur in vernal pools and marshes, both of which occur within 1 mile of the site. The Ione-formation species and chaparral species are considered unlikely to occur. A table listing these species is attached as Table 8.2-3B.

26. If there are special-status species that were not described in AFC Section 8.2.3 (pages 8.2-7 to 8.2-9), please include information on what habitat types they occupy and what the likelihood of presence is for the project site, laydown area, and linear facilities.

    Response: Table 8.2-3 lists the habitats occupied by all special status species considered to potentially occur within one mile of the project site and linears, with the exception of valley elderberrry beetle which is described on page 8.2-7.

27. Identify whether the species were observed in any of the surveys conducted at the site, the construction laydown areas, or along project linears.

    Response: No special status species were observed on the project site or along project linears during surveys for this project. However based on the habitat type and previous records, western pond turtle have been recorded in Clay Creek north of the project, fairy shrimp have been recorded north and east of the project, and tiger salamander are reported from 1.2 miles northwest of Rancho Seco.

BACKGROUND

The Cosumnes River Nature Preserve is within the region of the proposed project site and AFC Section 8.4 (Land Use) has a brief regional description, but there is limited information for the regional biological resources. On page 8.2-7 of the AFC, the Cosumnes River Nature Preserve is listed as having giant garter snakes (a state- and federally-threatened species) present and there is a map (Figure 6.1-5) that indicates the proposed gas pipeline route will go through the Preserve.

DATA REQUEST

28. Please discuss all areas of critical concern (as defined in section 1702 (q) of Title 20 of the California Code of Regulations) related to biological resources in the proposed project region (e.g., within 30 miles). For all areas of critical concern, identify the distance from the proposed project site, size (in acres), habitat types, ownership, and sensitive plant and animal species present.

    Response: The District requested this information from CDFG. Along with a sizable quantity of mapping information, CDFG advised that ACEC's have not been updated since 1975, and recommend using more recent data such as the CNDDB or SNA's. The information provided by CDFG is provided here as Attachment BR-28.

BACKGROUND

On page 8.2-7, in the special-status animals subsection, the AFC states that CNDDB records indicate that the valley elderberry longhorn beetle (VELB) (state- and federally-threatened species) is likely to occur along the Cosumnes River and other rivers that the proposed gas pipeline may cross. However, the AFC does not contain VELB field survey results.

DATA REQUEST

29. If VELB surveys were conducted for the project site and all project linears, then please provide the survey results (field survey dates, names and qualifications of biologists, transect spacing, locations and size of elderberry shrubs). If VELB surveys were not conducted, then conduct the appropriate (USFWS protocol) surveys and provide the survey results.

    Response: This question will be responded to on June 7, 2002.

BACKGROUND

AFC Section 8.2.4.2 (page 8.2-10), states that although California tiger salamanders have been recorded within a mile of the site, none were observed. The AFC also states if any are disturbed within the project site or along the linear facilities, then it would be an insignificant portion of the population. However, the AFC does not contain California tiger salamander field survey results.

DATA REQUEST

30. If California tiger salamander surveys were conducted for the project site and all project linears, then please provide the survey results (field survey dates, names and qualifications of biologists, transect spacing, locations and size of elderberry shrubs). If California tiger salamander surveys were not conducted, then conduct the appropriate (DFG protocol) surveys and provide the survey results.

    Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as not being relevant. However, SMUD agreed to survey for tiger salamanders along that portion of the gas pipeline that is located within 5 kilometers of the known site at Rancho Seco. Results of this survey will be provided about June 7, 2002, to meet protocol requirements.

BACKGROUND

In AFC Section 8.2.3.3, (page 8.2-7), it states that western burrowing owls often use ground squirrel burrows along railroad tracks and road cuts and that burrowing owls are likely to occur along the railroad tracks west of Franklin Boulevard and along Twin Cities Road. It also states that none were seen on or adjacent to the project site. However, the AFC does not contain western burrowing owl field survey results.

DATA REQUEST

31. If California tiger salamander [burrowing owl] surveys were conducted for the project site and all project linears, then please provide the survey results (field survey dates, names and qualifications of biologists, transect spacing, locations and size of elderberry shrubs). If California tiger salamander

[burrowing owl] surveys were not conducted, then conduct the appropriate (DFG protocol) surveys and provide the survey results.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as not being relevant. However, SMUD agrees to survey for burrowing owls in January 2003.

Attachment BR-8

CH2MHILL **TELEPHONE CONVERSATION RECORD**

Call To: Madeline Martinez

Phone No.: (916)930-3605 Date: December 11, 2001

Call From: EJ Koford Time: 05:36 PM

Message Taken By: EJ Koford

Subject: **INITIAL CONSULTATION ABOUT RANCHO SECO AND FISHERIES**

CEC staff requested to know when we would submit a Biological Assessment and get a Biological Opinion from NMFS. This seems early, and a consultation formally needs to be initiated by a federal agency. However, I called NMFS to discuss the issue and found Madeline to be very knowledgeable and helpful. The Cosumnes is her area.

NMFS has regulatory authority for winter and spring run chinook and steelhead. The USFWS has authority for delta smelt and splittail. Madeline can offer me a "technical assistance" letter, but a Biological Opinion could only address a federal agency request. Any advice given under technical assistance would not be binding on the Biological Opinion. She laid out a schedule for me that would have her issuing a conceptual BO on 30% design drawings ahead of the final design. She says she has had this issue before under the interagency agreement.

In this case, the NPDES discharge permit, as authorized by the EPA is the likely nexus. We didn't plan to apply for an NPDES for a couple months, but NMFS needs this to do their consultation. The other major federal agency would be the ACOE for a 404 permit.

We can provide Madeline a letter so she knows this is all coming, but formally it is the federal agency that will initiate the consultation. I asked Madeline if she was aware of any field data or studies on Clay Creek, Hadselville and Laguna. She was not, but directed me to Ramona Swenson at the Nature Conservancy 684-4012 for more information.

TABLE 8.2-3B
Special-Status Species Potentially Occurring Within 1 Mile of CPP Project Area

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments
Plants						
Legenere	*Legenere limosa*	--/1B	May-June	Vernal Pools	R	Known from 0.5 miles ESE of south end of Rancho Seco Dam
Boggs Lake Hedge-Hyssop	*Gratiola heterosepala*	--/E	April-June	Marshes, swamps, and vernal pools	R	Multiple occurrences in Forster Ranch, in San Joaquin County
Sacramento Orcutt Grass	*Orcuttia viscida*	E/E	May-June	Vernal Pools	R	Reported to occur southeast of Rancho Seco Dam
Ione manzanita	*Arctostaphylos myrtifolia*	T/T	January-February	Ione formation soils in chaparral, cismontane woodland from 120 to 1800 feet	U	No suitable habitat in the project area
Dwarf downingia	*Downingia pusilla*		March-May	Vernal pools and swales in grasslands and foothills; blooms	S	Moderate potential for occurrence; not found in the project area
Ione buckwheat	*Eriogonum apricum var. apricum*	E/E	July-October	Ione soils in openings in chaparral from 180 to 450 feet	U	No suitable habitat in the project area
Irish Hill buckwheat	*Eriogonum apricum var. prostratum*	E/E	June-July	Openings in chaparral on Ione soils from 270 to 390 feet	U	No suitable habitat in the project area
Tuolumne button-celery	*Eryngium pinnatisectum*	FSC	June-August	Vernal pools and mesic sites within cismontane woodland and lower montane coniferous forest from 210 to 2800 feet	S	No suitable habitat in the project area
Bisbee Peak rush-rose	*Helianthemum suffrutescens*	--/3	April-June	Serpentinite, gabbroic, or Ione soils in chaparral from 120 to 2,500 feet	U	No suitable habitat in the project area
Rose-mallow	*Hibiscus lasiocarpus*	--/2	June-September	Freshwater marshes and swamps	S	No suitable habitat; not found in the project area
Parry's horkelia	*Horkelia parryi*	FSC	April-June	Ione formation soils in chaparral or cismontane woodland from 240 to 3,000 feet	U	No suitable habitat in the project area

TABLE 8.2-3B
Special-Status Species Potentially Occurring Within 1 Mile of CPP Project Area

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments
Delta tule pea	*Lathyrus jepsonii var jepsonii*	FSC	May-September	Coastal freshwater marshes from 0 to 12 feet; blooms	S	Moderate potential for occurrence; known from the confluence of Badger Creek and the Consumnes River. Not found in the project area
Mason's lilaeopsis	*Lilaeopsis masoniii*	FSC/CR	April-November	Brackish or freshwater marshes and riparian scrub from 0 to 30 feet	S	No suitable habitat; not found in the project area
Pincushion navarretia	*Navarretia myersii ssp. Meyersii*	--/1B	May	Vernal pools from 20 to 270 feet	S	Known from the Badger Creek vicinity. Not found in the project area
Slender Orcutt grass	*Orcuttia tenuis*	FT/CE	Blooms from May-October	Vernal pools from 90 to 5,000 feet	R	Known from Laguna Creek. Not found in the project area
Sanford's arrowhead	*Sagittaria sanfordii*	FSC	May-October	Shallow freshwater marshes and swamps	S	May occur in farm ponds or wetlands. No suitable habitat on the project site
Insects and Crustacea						
Vernal pool fairy shrimp	*Branchinecta lynchi*	T/--	Resident	Vernal pools and ephemeral swales	R	Known to occur in vernal pools east of site
California linderiella	*Linderiella californica*	--/--	Resident	Vernal pools and ephemeral swales	R	Known to occur in vernal pools east of site
Vernal Pool tadpole shrimp	*Lepidurus packardi*	FE	Resident	Vernal pools and ephemeral swales	R	Present. Found in Pool #29. Suitable habitat identified in other pools throughout the survey area
Mammals						
None						
Reptiles and Amphibians						
California tiger salamander	*Ambystoma californiense*	C/SC	Resident	Ephemeral ponds and vernal pools	S	Site lacks any suitable ponds for breeding salamanders

TABLE 8.2-3B
Special-Status Species Potentially Occurring Within 1 Mile of CPP Project Area

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments
Northwestern pond turtle	*Clemmys marmorata marmorata*	FSC/CSC	Resident	Ponds, still pools along creeks and rivers, usually with well-developed riparian vegetation on fringes. Nests in uplands near water	R	Recorded from streams in vicinity and observed in Clay Creek, north of project site
Western spadefoot	*Scaphiopus hammodii*	CSC	Resident	Primarily grassland habitats. Occasionally in valley-foothill hardwood woodlands	S	Not seen. Suitable habitat identified. Vernal pools and permanent ponds offer breeding habitat. Small mammal burrows found at project area may be used as refuge during the dry season. Moderate to high potential for occurrence
Giant garter snake	*Thamnophis gigas*	FT/ST	Resident	Ponds and slow moving streams with dense emergent vegetation	S	Occurs in Cosumnes River and tributaries. No dense vegetation on project site to support this species
Birds						
White tailed kite	*Elanus leucurus*	--/FP	Resident	Nests in trees near open grassy fields	S	Probably forages on project site. No suitable nesting habitat on project site
Burrowing owl	*Athene cunicularia*	SC/SC	Primarily summer migrant	Nests in former squirrel burrows in short-grass prairie	S	Canal banks near project site may contain suitable habitat for burrowing owls, if squirrels and burrows were present. Species is known from general region. None observed during field surveys
California horned lark	*Eremophila alpestris actia*	--/SC	Summer migrant	Nests in open grassland prairies	S	Site is highly modified for agricultural development. Unlikely to nest there
Swainson's hawk	*Buteo swainsoni*	--/T	Primarily summer migrant	Nests in large cottonwoods along riparian corridors	S	Hawks may forage on and adjacent to project site; no suitable nest sites on project site
Golden eagle	*Aquila chrysaetos*	--/SC	Winter and Summer	Builds large platform nest in large trees or lattice transmission line towers	R	Nest site reported in 1992, 5 miles ENE of Rancho Seco
Cooper's hawk	*Accipiter cooperii*	--/SC	Winter and Summer	Nests in oak woodlands and conifer forests. Most common in	S	Not seen. Low potential for occurrence

TABLE 8.2-3B
Special-Status Species Potentially Occurring Within 1 Mile of CPP Project Area

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments
				live oak		
Tricolored backbird	*Agelaius tricolor*	SC/SC	Summer migrant	Cattail or tule marshes; Forages in fields, farms	S	Habitat suitable for foraging. Suitable nesting habitat exists in riparian shrubs on south side of project site. None seen during field surveys
Loggerhead shrike	*Lanius ludovicianus*	--/SC	S	Open habitats with sparse shrubs and trees. Uses perches such as trees, fences, and power lines to scan for prey	O	Loggerhead shrikes are present in the project vicinity
Double-crested cormorant	*Phalacrocorax auritus*	--/SC	Summer	Coast, inland lakes, fresh, salt, and estuarine waters. Lacustrine and riverine habitats in Central Valley	O	Occasionally present in Rancho Seco Reservoir, and common along Cosumnes and Laguna Creeks
Bank swallow	*Riparia riparia*	ST	Summer	Colonial breeder in vertical banks, usually close to water. Requires soft substrate for excavation	U	Not seen. Not expected to occur in project area

NOTES:
[1]Scientific names are based on the following sources: AOU, 1983; Jennings, 1983; Zeiner et al. 1990.
[2]Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code.
[3]Season Blooming period for plants. Season of use by animals.
[4]Primary Habitat Most likely habitat association.
[5]Present on site.

C Candidate for listing as federal threatened or endangered threatened. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.
CA California status.
CNPS California Native Plant Society Listing (does not apply to wildlife species).
E Federally listed as endangered.
E Species whose continued existence in California is jeopardized.
Fed Federal Status.
FP Fully protected against take pursuant to the Fish and Game Code Section 3503.5.
IB Plants, rare, threatened, or endangered in California and elsewhere and are rare throughout their range. According to CNPS, all of the plants constituting List 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection) of the California Department of Fish and Game Code and are eligible for state listing.
PE Proposed endangered.
PT Proposed threatened.
SC Species of Special Concern threatened. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.
SC California Department of Fish and Game "Species of Special Concern." Species with declining populations in California.
T Federally listed as threatened.
T Species that, although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.
-- No California or federal status.

TABLE 8.2-3B
Special-Status Species Potentially Occurring Within 1 Mile of CPP Project Area

Common Name	Scientific Name[1]	Status[2] (Fed/CA)	Season[3]	Primary Habitat[4]	Observed[5]	Comments

O Observed on site.
R Recorded on site.
S Suitable habitat on site.
U Unsuitable habitat on site.

SOURCE: California Department of Fish and Game, *California Natural Diversity Database*, 2001; California Native Plant Society, *Inventory of Rare and Endangered Vascular Plants Of California*, Feb. 1994.

Attachment BR-28

Information Provided by CDFG

Technical Area: Cultural Resources
CEC Author: Judy McKeehan
CPP Author: John Carrier

BACKGROUND

The AFC does not provide adequate information on built environment features or facilities that may be more than 45 years old. Additional information is needed to complete the staff analysis.

DATA REQUEST

32. Please identify all structures, facilities and features that are more than 45 years old or appear to be exceptional and are located within 100 feet of the proposed centerline of the gas line. These could include bridges, canals, railroads, roads, and transmission lines. If any of these structures/facilities are more than 45 years old, please have an architectural historian or a historian with a specialty in industrial, architectural or public history complete a Department of Parks and Recreation (DPR) 523A form. If it appears that any cultural resources may be significant, evaluate them for eligibility for the California Register of Historical Resources (CRHR) using additional appropriate DPR 523 forms.

    Response: Field crews from JRP Historical Consultants conducted a reconnaissance survey of all structures, facilities, and features that were more than 45 years old or appeared exceptional and were located within 100 feet of the proposed centerline of the gas line. These were recorded on DPR523A forms (see Data Response 36). There do not appear to be any resources that are eligible for listing in the California Resister of Historic Resources based on their architecture (Criterion 3) and our knowledge of the history of the area (Criterion 1). There is not a way to determine if any were associated with important persons (Criterion 2) without research beyond what is required for production of DPR523A forms.

BACKGROUND

It cannot be determined from the AFC and Data Adequacy Responses whether local historical societies and local jurisdictions (cities and counties) were contacted to determine if any historical resources in or near the project area are listed in local historical inventories or registers. Such local inventories are often not reflected in information obtained from a record search at the appropriate Archaeological Information Center. Historical resources listed on county or city inventories may be eligible for the CRHR, even if they have not been formally evaluated. Staff needs this information to complete its analysis.

DATA REQUEST

33. Please provide a list of any historical resources listed on Sacramento County, or SMUD District local inventories or registers within one half mile of the power plant site and within one hundred feet of the center line of all linear routes that are part of the project

Response: JRP staff consulted available lists of historical resources for the area. This included a check of the California Historical Information System (CHRIS) list, and an inquiry to the Sacramento County Department of Environmental Review and Assessment to see if there were resources listed in their files. There are no resources in the project vicinity that are listed in the CHRIS or with Sacramento County records.

34. If local historical societies and archaeological societies were not contacted, please contact them and provide copies of any inquiries and responses from such societies. If contact is made through interviews rather than by letter, please provide a written description of contact methods used, information obtained, and the names and contact information for those interviewed.

Response: The following agencies were contacted by phone or letter. Most did not return our inquiry. Comments received are noted below:

- El Dorado County, P.J. Reinhardt, 701 Persifer, Folsom, CA 95630
- Elk Grove Historical, Dorothy Hrepich, 12001 Green, Wilton, CA 95693
- Elk Grove Historical Society, Bob Fite, 10778 Calvine Road, Sacramento, CA 95830
- Florin Historical Society, Dave Reigold, 8149 Follett, Florin, CA 95828
- Gene Olson, POB 848, Galt, CA 95632 South West Corner of Twin Cities and Clay Station Road. She wanted to be notified when we are planning construction. Gave address to Billie Elliston.
- Old School House, Suzanne Hiddin, 5325 Ridgefield, Carmichael, CA 95608 House over 100 years old
- Galt Area Historical Society, Wanda Bouchey, 272 Emerald Oak, Galt, CA 95632
- Galt Area Historical, Jason Davies, 741 Winn Drive, Galt, CA 95632
- Rancho del Paso, Bob Kent, 3104 El Camino, Sacramento, CA 95821
- Rancho del Paso Historical Society, Harry Schnell, 2791 Corabel Lane #46, Sacramento CA 95821 N/A Out of Jurisdiction
- Sacramento Public Library, Ruth Ellis, 828 I Street, Sacramento CA 95814
- West Sacramento Historical Society, Kathy Perrigo, 417 Lilac Lane, W. Sacramento, CA 95691

- Yolo County Historical Society Lois Partridge, 1102 Redwood, Davis, CA 95616. Not in their district.
- Miwok Tribe, Billie Blue Elliston, 604 Pringle Ave #42, Galt, CA 95632. Burial site north side of Arno Road

BACKGROUND

Confidential Appendix 8.3 C-2 discusses a record search summary for the Cosumnes Power Plant Project that was conducted through the California Historical Resources Information System (CHRIS). It does not specify which regional Archaeological Information Center(s) were consulted.

The confidential Appendix 8.3C does not include a complete list of technical reports for the resources identified for the Proposed Gas Line Alignment in Appendix 8.3 C-2.

DATA REQUEST

35. Please submit all cultural resources survey reports that provide the methods and results of all surveys conducted for this project. The methods section should indicate the width of each linear survey area. If the survey coverage was less than 100 feet for historic features and less than 200 feet for archaeological features on each side of the centerline of the linear alignments, additional surveys should be completed to attain this coverage.

    Response: The Applicant has provided the CEC (under a request for confidentiality) with all copies of reports in our possession. Since the reports were conducted by others, each report must be examined for the area surveyed. Surveys of historic features were conducted within 100 feet of each side of the centerline. However, cultural resource surveys may also have been limited to 100 feet each side of centerline due to a lack of permission to survey on private property.

36. For the surveys conducted specifically for the Cosumnes Power Plant Project, rather than the surveys conducted for other projects, the report appendices should contain resumes of investigators and a letter from the information center where the records search was performed stating they performed the search or that an in-person search was conducted by the applicant's consultant.

    Response: Resumes of those performing cultural and historic surveys are presented in Attachment CR-36.

37. Provide copies of all DPR 523 site record forms for cultural resources in or within ¼-mile of the project and all linear alignments required for the project.

    Response: The Applicant has provided CEC staff with copies of the archeological DPR 523 form prepared for this project (see Confidential Appendix 8.3E) and any DPR 523 forms in our possession resulting from our contacting CHRIS. Copies of the DPR 523 forms from the historical structures

search and a map showing the location of the buildings/structures are provided as Attachment CR-37.

38. Provide the dimensions of the proposed Area of Potential Effects (APE) for the project site and linears.

    Response: The Horizontal Directional Drilling (HDD) will require entry pits about 200 feet x 200 feet and exit pits of approximately 50 feet x 100 feet. The gas pipeline trench will generally be about 6 feet across, and approximately 7.5 feet deep. However, the contractor may need to adjust this size based on construction practices and soil types. The general width of the construction area along the gas line will be about 75 feet across.

39. Please provide a plan to avoid (the plan should include, but not be limited to CA-SAC-93) all identified archaeological sites (both prehistoric and historic) within 200 feet and historic sites (built environment) within 100 feet of the plant site, linear routes, laydown, parking areas, and access roads. If it appears that a cultural resource cannot be avoided, provide a test plan for each archaeological resource and complete and provide the evaluation forms DPR 523, as appropriate, for historic resources, pursuant to CEQA Section 15064.5, (a), (3), (A)(B)(C) & (D).

    Response: This question will be responded to on February 4, 2002.

40. On maps 1-6 of Confidential Appendix 8.3D, please identify what areas of the proposed gas line were covered in each report. AFC page 8.3-21 discusses several sections on the route that were almost completely surveyed. Please also add the locations of areas that were not completely surveyed.

    Response: This question will be responded to on February 4, 2002.

BACKGROUND

AFC Sections 2.2.15, 8.2.4, and figure 2.2.3-3 refer to a potential parking and laydown area south of Clay Road and the project site. No cultural resource survey information is provided for this area.

It is possible that temporary staging and laydown areas and workforce parking for the gas pipeline construction could be placed in areas leased or rented from property owners adjacent to the pipeline easement. Staff needs additional information to determine whether there is the potential for impacts to cultural resources.

DATA REQUEST

41. Please survey and provide survey information for the parking and laydown area south of Clay Road and the project site.

    Response: This area will be surveyed in January 2001, and this question will be responded to on February 4, 2002.

42. Identify the location of any areas that will be used as pipe or equipment staging and laydown areas or for parking, water supply, fire protection waterline, or other purposes. Please provide the results of a cultural resources survey for these areas.

    Response: This question will be responded to on February 4, 2002.

43. If cultural resources are present, please provide completed DPR 523 forms for the resource(s).

    Response: This question will be responded to on February 4, 2002.

BACKGROUND

The AFC, Section 2.4.3 states that a new gas line parallel to the existing SMUD gas line would be required for operation of the second phase of the project. AFC Sections 1.2, and 2.1 indicate that construction of Phase II is within the current schedule. Staff needs additional information about cultural resources that could be impacted by construction of this pipeline. It appears from information provided in the AFC p. 2-25 that the gas line for phase II is part of this project.

DATA REQUEST

44. Please provide the results of a records search that extends ½-mile from the centerline of the proposed gas line for Phase II.

    Response: The primary plan for supplying natural gas to Phase II is through the existing and proposed 26-mile extension of the District pipeline, with pressure enhanced by compression. Since a suitable supply is available and a second pipeline is not necessary, no records search is needed.

45. Please conduct an archaeological pedestrian survey that extends to a minimum of 200 feet on both sides of the proposed center line of the gas line and provide the results. Complete DPR forms 523A for identified resources.

    Response: Gas compressors will be added to the pipeline to provide sufficient gas pressure for Phase II. Therefore, no new gas lines will be required and no additional impacts will occur.

46. Please conduct an historic resources survey that extends to a minimum of 100 feet on both sides of the center line and provide the results. The survey should be conducted by someone who meets the Secretary of the Interior Standards in history or architectural history. Record cultural resources that appear to be 45 years or older on a DPR 523A form and complete additional DPR 523 forms as appropriate for evaluation.

    Response: Gas compressors will be added to the pipeline to provide sufficient gas pressure for Phase II. Therefore, no new gas lines will be required and no additional impacts will occur.

47. Describe avoidance procedures for any cultural resources that are identified.

    Response: Gas compressors will be added to the pipeline to provide sufficient gas pressure for Phase II. Therefore, no new gas lines will be required and no additional impacts will occur.

48. If it is not possible to avoid the cultural resource(s), please provide an evaluation of the eligibility of the site(s) for the California Register of Historical Resources pursuant to (CEQA Section 15064.5, (a), (3), (A), (B), (C), and (D).

    Response: Gas compressors will be added to the pipeline to provide sufficient gas pressure for Phase II. Therefore, no new gas lines will be required and no additional impacts will occur.

BACKGROUND

AFC Section 8.3.5 proposes that construction monitoring take place in areas of proximity to the cultural resources listed on Table 8.3-4 and in areas of high probability for cultural resources. It is not possible to determine from the present information which areas are to be considered of "high probability", additional information is needed to complete the staff analysis.

DATA REQUEST

49. Please identify the location of areas considered "high probability areas" on maps 1-6 (Confidential Appendix 8.3D).

    Response: This question will be responded to on February 4, 2002.

BACKGROUND

The discussion of cumulative impacts in the AFC does not provide any information on other projects in the area that could impact cultural resources. The discussion of cumulative impacts should consider such other projects. Additional information is needed to complete the staff analysis.

DATA REQUEST

50. Please provide a discussion of other projects (in permitting or currently under construction) within a one-mile radius of the Cosumnes Power Plant project.

    Response: The Applicant is not aware of any other projects currently planned or under construction within one mile of the project site.

51. Please provide a discussion of the cumulative impacts relevant to the information from the previous question.

    Response: Because there are no other projects known, there are no cumulative impacts to cultural resources.

BACKGROUND

It appears from the content of the letters sent to the Native Americans on the Native American Heritage Commission (NAHC) contact list that the linear routes were not described. It is necessary to inform Native Americans regarding the entire project and linears.

DATA REQUEST

52. Please send an additional letter to members of the Native American Community listed by the NAHC for Sacramento County. In that letter, identify the location of all project linears and provide a map(s) that indicates the project location and location of the linears.

    Response: The Applicant has sent letters and maps to the tribal representatives identified by the NAHC. Any changes to the project description have been minor and are within the areas identified on the maps sent to the Native American Community. The Applicant has been working closely with representatives of the Miwok tribe and others. Therefore, it is not necessary to send additional letters.

53. Provide copies of the letters to and responses from Native Americans.

    Response: The Applicant has provided copies of all responses from Native Americans to the CEC. Would the CEC also like copies of meeting minutes with the Miwok representatives?

Attachment CR-36

Resumes of Cultural and Historic Surveyors

JAMES C. BARD

Cultural Resource Specialist

Education

Ph.D., Anthropology, University of California, Berkeley, 1979

M.A., Anthropology, University of California, Berkeley, 1976

B.A., Anthropology, University of California, Berkeley, 1974

Professional Registrations

Society for California Archaeology, Approved Consultant

Society of Professional Archaeologists (ROPA)

California Lifetime Junior College Teaching Credential, Anthropology

Distinguishing Qualifications

Founded, owned, and managed Basin Research Associates, Inc., a cultural resource management consulting firm in the San Francisco Bay area (1977-1993)

Twenty-five years of archaeological experience in the western United States

Over 25 professional publications in the field of cultural resources

Developed patination dating technique for Great Basin

Relevant Experience

Dr. Bard is responsible for directing cultural resource management projects for CH2M HILL. He has extensive experience in prehistoric archaeology, cultural resource management, and small business management. He has been extensively involved in the management of and/or participation in cultural resource investigations in compliance with the National Environmental Policy Act, the National Historic Preservation Act, and a variety of other federal cultural resource regulations. He has extensive experience in the implementation of cultural resource investigations to meet the requirements of the California Environmental Quality Act (CEQA) and the Washington State Environmental Policy Act (SEPA).

Dr. Bard is a cultural resources management specialist with a broad technical and geographical background in all aspects of cultural resource assessment and regulatory compliance. He has 21 years of professional experience in the design and management of cultural resource components of EAs, EIRs, and EISs for federal, state, and municipal agencies, private industry, the military, and the scientific community. His specialties include program management, coordination of technical analyses, research design formulation, Section 106 compliance, Native American and general client liaison, human resources management, and marketing. Dr. Bard's research interests include California, Great Basin, and Columbia Plateau archaeology and ethnology, scientific applications in archaeology (archaeometry), cultural ecology, paleoenvironmental reconstruction, lithic technology and experimental archaeology, prehistoric rock art, archaeological methods and theory, and cultural resource management. He has

completed projects located throughout California, the Great Basin, and Pacific Northwest, and has experience in the northwestern Plains (Alberta) and the Southwest (Arizona).

Prior to joining CH2M HILL in 1993, Dr. Bard held a 50 percent ownership and served as a Principal of Basin Research Associates, Inc. [BASIN] for more than 16 years. BASIN is headquartered in the San Francisco Bay Area and serves a broad array of clients throughout California and Nevada. Dr. Bard and a partner founded BASIN in 1977 while completing their graduate studies at U.C. Berkeley. During Dr. Bard's 16-year tenure with BASIN, over 1000 individual projects were completed by the firm. Dr. Bard has served as Principal or Co-Principal Investigator for over 350 cultural resource assessments associated with urban and rural land planning, the development of water, energy, and mineral resources, and urban development throughout northern and central California and Nevada.

In addition, Dr. Bard served as principal or co-principal investigator for over 30 cultural resource mitigation programs throughout northern and central California, which involved site testing and data recovery operations. He served as a discipline specialist or project archaeologist for over 50 cultural resource mitigation programs throughout northern and central California and Nevada which involved site testing and data recovery, extended laboratory analysis, and/or specialized scientific analysis. Over the years, Dr. Bard has provided consultations to public agencies, private land developers, and architects and engineers.

Prior to founding BASIN, Dr. Bard worked as a teaching assistant in the Department of Anthropology, at the University of California, Berkeley, for such courses as Introduction to Prehistoric Archaeology, Science and Archaeology and Archaeology and Society (1974-1976). He was also a guest researcher, conducting archaeometric studies, at the Lawrence Berkeley Laboratory at U.C. Berkeley (1974-1979) and a volunteer assistant at the Pheobe Apperson Hearst Museum of Anthropology (formerly the Robert H. Lowie Museum of Anthropology) (1970-1972). He also served as a volunteer staff Archaeologist with the University of California, Los Angeles, Archaeological Survey (1969-1970).

Representative Projects

Energy/Power and Communication Transmission/Distribution

Principal investigator for cultural resource assessment for Pacific Gas and Electric Company's Tri-Valley Project, Amador and Livermore Valleys, California. Surveys and siting studies for new electrical transmission generating capacity and delivery for Dublin, Pleasanton, and Livermore, California.

Project manager for the cultural resource program for Pacific Gas Transmission Company's Pacific Northwest Expansion Project in Oregon. This multi-year project (1993-1994), which is being licensed by the Federal Energy Regulatory Commission (FERC), requires compliance with a number of Federal and state cultural resource laws and regulations. The cultural resource program requires the coordination and management of a team of subconsultant specialists in archaeology, history, ethnology, ethnohistory, and other related disciplines; and coordination and liaison with Federal and state agencies and Native American Tribal groups. The program will include archaeological survey, testing, and data recovery operations, and implementation of a Native American participation program.

Cultural resource specialist for Tuscarora Pipeline Company's application to the Federal Energy Regulatory Commission (FERC) for a Certificate of Public Convenience and Necessity in Oregon, California, and Nevada. Supervised subconsultant's preparation of the cultural resource element to the Resource Report, provided senior review, and identified subconsultants for subsequent work phases.

Cultural resource specialist for SAI Soledad Energy, Inc.'s Soledad Biomass Power Plant cultural resource assessment. Served as Principal Investigator for a cultural resource assessment of a proposed biomass power plant in Soledad, Monterey County, California. Conducted research, supervised the field survey and prepared the technical report.

Cultural resource specialist for the Northwest Power Enterprises, Inc.'s Starbuck Gas-Fired Generating Plant Project, Columbia County, Washington. Served as Principal Investigator for a 120-acre survey and subsurface testing program of the proposed and alternative generating plant sites, assisted with Tribal consultations and evaluation of traditional cultural properties, and co-authored two technical reports.

Cultural resource specialist for the preparation of a National Park Services Bulletin 38 "Traditional Cultural Property" (TCP) investigation for the proposed Lorella Pumped Storage Electrical Generating Plant, Klamath Falls, Oregon. Conducted interviews with Modoc tribal elders and prepared a preliminary TCP evaluation report.

Project manager for the cultural resource inventory of 1600 acres along the Columbia River near Vernita Bridge at the U.S. Department of Energy's Hanford Site in Richland, Washington. Directed a large scale survey of DOE lands along the southern bank of the Columbia River using a predominantly Native American work crew composed of Wanapum, Nez Perce, and Yakama tribal members. Served as Principal Investigator and lead author of the technical report.

Project manager for the cultural resource inventory of seven proposed basalt quarries at the U.S. Department of Energy's Hanford Site in Richland, Washington. Directed a 685 acre survey of proposed quarry site and served as Principal Investigator and lead author of the technical report.

Project manager for the cultural resource inventory of the former Central Shops Complex and five Antiaircraft Artillery installations along Army Loop Road at the U.S. Department of Energy's Hanford Site in Richland, Washington. Directed the field investigations and served as Principal Investigator and lead author of the technical report.

Project manager and principal investigator for the preparation of a historic context statement pertaining to the Ethnographic/Contact Period (Lewis and Clark 1805-Hanford Engineer Works 1943) for the U.S. Department of Energy's Hanford Site in Richland, Washington.

Project manager and principal investigator for the preparation of a historic context statement pertaining to the Pre-1943 Settlement/Farmstead Period (Lewis and Clark 1805-Hanford Engineer Works 1943) for the U.S. Department of Energy's Hanford Site in Richland, Washington.

Principal investigator for the preparation of a Traditional Cultural Properties Management Plan for the U.S. Department of Energy's Hanford Site in Richland, Washington, based on tribal elder testimony provided at a workshop sponsored by Battelle Pacific Northwest Laboratory.

Co-principal investigator for the preparation of a Curation Strategy for the U.S. Department of Energy's Hanford Site in Richland, Washington - a document that will guide DOE's curation of Manhattan Project and Cold War artifacts and records. Recommendations by members of an invited panel of nationally recognized museum professionals, that met at the curation workshop sponsored by Battelle Pacific Northwest Laboratory, are included in the strategy document.

Senior consultant to the Bonneville Power Administration (BPA). Assist BPA with peer review, program management, and provide technical support to BPA's cultural resource program manager. Bonneville Power Administration, Department of Energy, Portland, Oregon.

Principal investigator for the cultural resource clearance work associated with the construction of underground repeater boxes located in the Deschutes National Forest for U.S. West Communications Company, Bend, Oregon.

Principal investigator for the cultural resource assessment of the Vansycle Wind Farm Project in Umatilla County, Oregon for ESI Energy, Inc. (Florida Power and Light), North Palm Beach, Florida.

Task leader for the preparation of the cultural resource element of the NEPA EIS for the Bond Falls, Bergland, Cisco Lakes, and Victoria Developments, Upper Peninsula, Ontonagon River, Michigan. EIS for the Federal Energy Regulatory Commission (FERC Project No. 1864).

Principal investigator for the cultural resource assessment of the Delta Energy Center Project in Contra Costa County, California for Calpine/Bechtel, San Francisco, California. Delta Energy Center is a 700+ MW gas-fired power plant licensed by the California Energy Commission.

Principal investigator for the cultural resource assessment of the Metcalf Energy Center Project in Santa Clara County, California for Calpine/Bechtel, San Francisco, California. Metcalf Energy Center is a 600 MG gas-fired power plant licensed by the California Energy Commission.

Professional Activities

1990 - present, Peer Reviewer, Journal of Field Archaeology

1986 - present, Peer Reviewer, Society for Archaeological Sciences Bulletin

1977 - present, Public Service, group/individual, career counseling, artifact/antiquities review

Honors and Awards

1970-79 - Dean's Honors List, University of California, Berkeley

1974 - A.B. with Distinction in General Scholarship, University of California, Berkeley

1976 - Robert H. Lowie Scholarship in Anthropology, University of California, Berkeley

1985 - American Committee for the Preservation of Archaeological Collections - Certificate of Appreciation

Memberships in Professional Organizations

American Anthropological Association

American Committee for the Preservation of Archaeological Collections

Archaeological Institute of America

Association for Field Archaeology
Association for Washington Archaeology
Association of Oregon Archaeologists
California Committee for the Promotion of History
Great Basin Anthropological Conference
National Trust for Historic Preservation
Nevada Council of Professional Archaeologists
Society for American Archaeology
Society for Archaeological Science
Society for California Archaeology
Society for Historic Archaeology
Register of Professional Archaeologists

Jim Sharpe

Archaeologist

EDUCATION

M.S., Resource Management, Central Washington University (1997)

B.S., Anthropology, Central Washington University (1994)

DISTINGUISHING QUALIFICATIONS

Cultural and Natural Resource Management

Prehistoric and Historic Archaeology

Extensive Native American Tribal experience

Historical Research

RELEVANT EXPERIENCE

Mr. Sharpe has 8 years of experience in cultural resources with extensive and unique experience with prehistoric and historic sites along almost 150 miles of the Columbia River shoreline and numerous islands. His vast experience at the Department of Energy's Hanford Site include: completion of cultural resource reviews for compliance of Section 106 of the National Historic Preservation Act, historic research, site inspection, archaeological survey, site monitoring, subsurface testing, excavation, site evaluations, technical report writing, and tribal liaison for the Yakima, Umatilla, Nez Perce, and Wanapum Tribes.

Cultural Resource Specialist for the CH2M HILL Company: responsibilities include maintaining a good working relationship with Native American Tribes, archaeological survey, research on cultural resource projects, recording sites and isolates, subsurface testing, excavation, monitoring, site evaluation, technical report writing, use of topographic maps, aerial photographs, and camera equipment.

In 1999, Mr. Sharpe was part of a team of CH2M Hill archaeologists performing fieldwork near Hoover Dam in Nevada. Prehistoric sites were mapped and artifact types analyzed.

In 1999, Mr. Sharpe was part of a team of archaeologists that performed a series of excavations at a site in Sherwood, Oregon for a federal highway project.

In 1999, he represented CHM2HILL in an archaeological survey on a portion of Owens Lake near Lone Pine, California.

In 1998, Mr. Sharpe assisted Pacific Northwest National Laboratories (PNNL) with three archaeological surveys, site recording, historical research and report preparation.

In 1997, he assisted PNNL as project lead for a cutbank-monitoring project. About 80 cutbanks were monitored to assess damage to archaeological sites and possible exposure of human remains from recent high water.

Prior to working with CH2M HILL, Mr. Sharpe was a contract archaeologist with the Grant County Public Utility District. Experience included archaeological fieldwork, project lead for a survey project with Native Americans, site recording and updates, and historical research for the Priest Rapids and Wanapum Reservoirs of the mid-Columbia River.

Additional experience includes: six weeks of archaeological fieldwork and two spring archaeological field schools at Central Washington University, excavation experience with Eastern Washington University, survey with Northwest Archaeological Associates on scattered tracts of land in the Wenatchee National Forest.

Publications

Masters Thesis: Issues and Conflicts in the Management of the Public Domain of the Saddle Mountains in Eastern Washington: A Case Study.

Archaeological Survey of 56 Preselected Parcels on the Arid Lands Ecology Reserve. BHI-01268, Richland, Washington.

Chinese Gold Miners of the Mid-Columbia Region. BHI-01316, Richland, Washington.

Pre-Hanford Agricultural History: 1900-1943. BHI-01326, Richland, Washington.

Specialized Training

Workshop for new section 106 regulations 11/29-11/30/99

40 Hour Hazardous Waste Training

First Aid Training

Public Consultant Pesticide License

RAND F. HERBERT

JRP HISTORICAL CONSULTING SERVICES

EDUCATION:

MAT, History, University of California, Davis, 1977.
BA, History, University of California, Berkeley, 1973.

BUSINESS AND PROFESSIONAL CREDENTIALS:

Partner, JRP Historical Consulting Services, 1991 - present.

Partner, Jackson Research Projects, 1981-1991; Partner, California-Pacific Research Associates, 1978-1981.

Chair, California Council for the Promotion of History [CCPH] (1990-1992); served as member, Steering Committee, 1984-1992.

Registered Professional Historian #508, CCPH.

CCPH Representative on Secretary of Resources Douglas Wheeler's ad hoc Historic Preservation Task Force (1990-1992).

CCPH Representative to the California Statewide Coordination Committee for Historic Preservation (1995-1996).

Member, California Council for the Promotion of History, National Council on Public History, California Historical Society, Ninth Circuit Court Historical Society; Modoc County Historical Society.

CULTURAL RESOURCES MANAGEMENT PROJECTS

Mr. Herbert's academic fields of specialization were in California and Western United States history. Following graduation from the University of California with his MA in 1977 he has worked as a consulting historian on a wide variety of historical research and cultural resources management projects, as a researcher, writer, and project manager.

Over the past five years, Mr. Herbert has managed, written, or worked on building inventory and evaluation projects for Caltrans, the Department of Defense, San Gabriel Valley Council of Governments, and other agencies or private individuals.

Pertinent examples of projects undertaken during the last five years include:

Principal investigator / project manager Historic Resources Evaluation Report, WAPA Transmission Lines near Sacramento, California. With Far Western Anthropological Research Group, Inc., and Tetra Tech. October - December 2001.

Principal investigator / project manager, Inventory and Evaluation of World War II and Cold War Era Buildings at Tooele Army Depot, Utah. With CH2MHill for the Sacramento District, Corps of Engineers. 2001

Principal investigator / project manager Historic Resources Evaluation Report, AFC for Proposed Roseville Power Generation Facility, Placer County, California. URS Corporation, 2001.

Principal investigator / project manager, Inventory and Evaluation of 15 Buildings at Tooele Army Depot, Utah. With CH2MHill for the Sacramento District, Corps of Engineers. 2001

Historic Architectural Survey Report and Finding of Effect, Caltrain Extension to Transbay Terminal Joint Development Project, San Francisco, California. For Parsons Transportation Group. Project on-going.

Principal investigator / project manager, Silicon Valley Rapid Transit Project, California. With Earthtech and Parsons Transportation Group/DeLeuw Cather, Inc. 2001-on-going.

Principal investigator / project manager, Caltrain Electrification Project, San Francisco – Gilroy, California. With Parsons Transportation Group/DeLeuw Cather, Inc. 2000-on-going.

Principal investigator / project manager, North 11th Street Improvement Project, City of Montague, Siskiyou County, California. 2000

Principal investigator / project manager, Highway 25 By-Pass Project, Hollister, San Benito County, California. With DeLeuw Cather, Inc. 1998-2000.

Principal investigator / project manager, SEATS (Southeast Area Traffic System) Project, City of Sacramento, California. With EIP Associates. 1999-2000.

Principal investigator / project manager, Alameda Corridor East Grade Separations Project, Los Angeles County, California. With Parsons Transportation Group. 1999-2001.

Principal investigator / project manager, Highway 65 Widening Project Near Lincoln, California. With EIP Associates. 2000.

Principal investigator / project manager, Tuolumne Boulevard Extension Project, City of Modesto. With Parsons Transportation Group. 1999-2000.

Principal investigator / project manager, inventory and evaluation projects for US Marine Corps in California (Camp Pendleton, MGACC Twentynine Palms, Marine Recruit Depot). With Foster Wheeler Environmental Corporation, Inc., 1997-on going.

Principal investigator / project manager, inventory and evaluation projects for US Navy in California (inventory and evaluation of resources on more than twenty Navy installations). With Foster Wheeler Environmental Corporation, Inc., 1997-on going.

Prinicpal investigator / project manager, Statewide Department of Defense inventory of cultural resources projects and thematic context statement. With Foster Wheeler Environmental Corporation, Inc. 1997- on going.

Project Manager, Sacramento – Folsom Light Rail Extension. For DeLeuw Cather Inc. for Sacramento Regional Transit. 1998-2000.

Principal Investigator, identification and inventory of historic resources, NAWS China Lake, for US Navy, on-going on-call contract.

Principal Investigator, Naval Radio Receiver Facility, Imperial Beach, KEA Environmental, for US Navy, 1996-1997.

Principal Investigator, Rio Vista Army Reserve Center, for Sacramento District US Army Corps of Engineers, 1996-1997.

Principal Investigator, Evaluation of historic significance under CEQA (National Register Eligibility), Nishi Farm Complex, Davis, CA. City of Davis. 1995.

Project Manager, Historic Architectural Survey, Sacramento Light Rail Southern Extension Project, Sacramento, CA. Sacramento Regional Transit District. October 1995.

Principal Investigator, National Register Evaluation, Sacramento Air Depot River Docks Complex. Army Corps of Engineers, Sacramento District, 1995.

Project Historian, National Register evaluation of Mare Island Naval Shipyard, Solano County, CA. Tetra Tech, Inc., San Francisco, 1995.

Project Manager, Highway 58 Tier 1 Route Assessment, Kern County, California. DeLeuw Cather, 1992-1995.

Project Historian, Thematic Study of Canals in California for California Department of Transportation, 1995.

Principal Investigator, National Register Evaluation of the Sacramento Air Depot River Dock Complex, Sacramento, California. Sacramento District, Corps of Engineers. 1995.

Project Historian, National Register Evaluation of World War II buildings and sites at McClellan Air Force Base, Sacramento County, CA. Woodward-Clyde Consultants, Inc., Oakland, 1995.

Project Manager, Historic American Engineering Record, Pardee Dam Complex, Calaveras County, California. With Field Documentation Services (photography), Woodward-Clyde Consultants, Inc., for East Bay Municipal Utility District. 1995.

LECTURES AND PUBLIC PRESENTATIONS:

"Historical Resources at NAWS China Lake." Presented to the Society of California Archeology, April 1998.

"Using Federal and State Records in Environmental History Investigations." Presented to the Society of California Archivists, April 1996.

"Careers in Public History." Symposium for students of Public History, National Council for Public History Annual Conference, Sacramento, California, March 17, 1994.

"Historically Huge: Documenting the Blimp Hangars at MCAS-Tustin, Some of the Largest Wooden Buildings in the World." Given to California Historical Society Annual Conference, September 19, 1992.

"Establishing Historical Significance in Historic Preservation." 14th Annual California Preservation Foundation Conference, April 22, 1989.

"The Role of the Historical Consultant in CRM, Expert Witness, and Other Projects." Annual Conference, California Committee for the Promotion of History, October 22, 1988.

"An Historical View of California Water Law," for Agricultural Economics 145, UC Davis, March 3, 1987.

"California Gold Rush Sites." (class and guided tour) 1982-1984.

"Personalities in Sacramento History," for University Extension, University of California, Davis, March 17, 1983.

"Water Development and Policies in California." Oakland-Piedmont Chapter of League of Women Voters, October 5, 1978.

"California Water: Problems and Progress." Oakland-Piedmont Chapter of League of Women Voters, March 8, 1978.

TEACHING EXPERIENCE:

California State University, Sacramento. History 282A, Graduate Seminar in Public History, Spring 2001
Solano Community College, January 1980 - present.
American River College, 1976-1979.

Amanda Blosser

JRP HISTORICAL CONSULTING SERVICES

EDUCATION:

M.S., Historic Preservation, 1999, Texas Tech University, Lubbock, TX.

B.A., Art History, 1995, University of Texas, Austin, TX.

RELEVANT WORK EXPERIENCE:

October 2001 – Present	Staff Historian / Architectural Historian, JRP Historical Consulting Services
1999-2001	Architectural Historian/Historic Preservation Specialist, Brevard, North Carolina
1999	Intern, Department of Architectural Research Services and Conservation, Colonial Williamsburg, Virginia
1997	Student Architectural Conservator, Ft. Davis National Historic Site, Ft. Davis, Texas

HONORS AND PROFESSIONAL ORGANIZATIONS:

Member, Society of Architectural Historians
Member, National Trust for Historic Preservation

JRP PROJECTS:

Contributor / Architectural Historian:

Historic Resources Evaluation Report, WAPA Transmission Lines near Sacramento, California. With Far Western Anthropological Research Group, Inc., and Tetra Tech. October - December 2001.

NRHP Inventory and Evaluation of WWII and Cold War Era Buildings, Parks RFTA. Prepared for US Army. Project on-going.

Historic Architectural Survey Report, Highway 25 Alternatives: Hollister, San Benito County to Gilroy, Santa Clara County, CA. Caltrans, District 5, San Luis Obispo. July 2001-Present.

Other Work Experience

Façade Study of Mill Street, Columbus, North Carolina. Columbus Downtown Revitalization Committee, 2001.

Survey of Historic Resources of Downtown Rock Hill, South Carolina. Rock Hill Economic Development Corporation, 2001.

Documentation for the partial reconstruction of Old City Hall, Brevard, North Carolina. Al Platt Architects, 2001.

Part One Tax Credit Certification, City Market Building, 30 West Main Street, Brevard, Transylvania County, North Carolina. Al Platt Architects, 2001.

Nomination to the National Register of Historic Places, Main Street Historic District, Brevard, Transylvania County, North Carolina. Transylvania County Historic Preservation Commission. 2001.

Nomination to the National Register of Historic Places, Hudson-Hull House, Shelby, Cleveland County, North Carolina. Historic Shelby Foundation, 2001

Nomination to the National Register of Historic Place, T. Max Watson House, Rutherford County, Theron Watson,2000.

Nomination to the National Register of Historic Places, Major William E. Breese House, Brevard, Transylvania County, North Carolina. Harris Architects, 2000.

Part B Tax Credit Certification (NC state tax credit) and Nomination to the National Register of Historic Places, Max and Claire Brombacher House,Brevard, Transylvania County, North Carolina. Gary and Ann Himes, 2000.

Nomination to the National Register of Historic Place, Allison-Deavor House, Transylvania County. Transylvania County Historical Society, 2000.

Nomination to the National Register of Historic Place, Grey Hosiery Mill, Henderson County. Henderson County Historical Society, 2000.

Historic Property Investigation, Curtis Bynum House, Asheville, Buncombe County, North Carolina. Harris Architects, 2000.

Attachment CR-37

Historical DPR 523A Forms and Location Map

Technical Area: Geology
CEC Author: Janine Weber Band
CPP Author: Tom Lae

BACKGROUND

Upon review of the AFC and of the topographic map of the area, staff is concerned about the safety of the dammed reservoir approximately one mile upstream from the proposed site. The CPP site appears to lie in the inundation zone if the dam were to fail, yet no mention of this dam was made in the report.

DATA REQUEST

54. Please provide a discussion of the geotechnical stability of the dam and potential worst-case scenario, such as a seismic groundshaking event while the reservoir is full.

Response: The reservoir's surface area is 164 acres and the maximum capacity is 2,850 acre-feet, for an average reservoir depth of 17 feet. The maximum height of the dam is approximately 60 feet and the total length is 1,800 feet. The crest width is 28 feet, the side slopes are relatively flat at 4:1, and the upstream slope within the range of water level fluctuations is protected by riprap. The downstream slope is grassland. The reservoir was designed to supply cooling water and firewater to the Rancho Seco Plant in the event of an emergency such as a loss-of-coolant accident, fire, or other emergency, including one resulting from a seismic event. The reservoir and dam were analyzed prior to its construction and approved by the NRC for their intended purposes.

The following is an excerpt from the Rancho Seco Nuclear Generating Station Preliminary Safety Analysis Report, Page 2.6-1, Amendment 1:

> There is no reason to anticipate fault propagation in the site area. Earthquake shaking will occur as the result of shocks along distant faults, but due to their distant origin and nature of the foundation material beneath the site, ground accelerations of no greater than 0.05g should occur during the life of the plant. Therefore, a conservative value of 0.1g will be used for design.

The following is an excerpt from the Rancho Seco Nuclear Generating Station Updated Safety Analysis Report, Page 5.5-3, Amendment 5:

> The dam is under the jurisdiction of the State of California, Division of Dam Safety, and as such it is designed and

constructed to standards established by the State of California, which include consideration for earthquake.

The effects on the plant of a dam failure or other sudden release of water have been investigated. An instantaneous break 50 feet wide and the full height of the dam occurring simultaneously with the peak flow from a design storm would not flood the plant site. The resulting flow would have a water surface more than 10 feet below any of the safety features.

The minimum elevation of the Rancho Seco Plant industrial area is 147.5 feet above mean sea level, which is the same as the minimum elevation planned for Cosumnes Power Plant as shown in AFC Figure 8.14-4.

Technical Area: Land Use
CEC Author: James Adams
CPP Author: Katy Carrasco

BACKGROUND

AFC Section 8.4.6, Cumulative Impacts, discusses the potential cumulative land use impacts that would result from the proposed project. The AFC discusses existing land uses in the vicinity of the proposed project, but does not identify existing or proposed projects along the proposed linear facility corridor.

DATA REQUEST

55. Please identify and describe the "other major existing land uses" cumulative projects referenced on page 8.4-15 of the AFC.

    Response: The phrase, "other major existing land uses" was referring to the former Rancho Seco Plant, existing transmission lines, existing water supply pipeline that supplies water from the Folsom-South Canal to Rancho Seco, and the Rancho Seco electrical switchyard. The proposed CPP is consistent with these existing land uses.

56. Please provide a map that shows the location of all cumulative projects identified including future projects along the proposed linear facility corridor (i.e., natural gas transmission line, and water line). This should also include projects that have been proposed since June 2001.

    Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being burdensome and speculative.

BACKGROUND

Section 6 of the AFC discusses the proposed route of the natural gas pipeline. Figure 6.1-1 shows these pipeline routes, several of which appear to enter the City of Elk Grove. There is no discussion of any applicable LORS that may apply to the proposed or alternate gas pipeline routes.

57. Please identify any pertinent LORS that the City of Elk Grove has related to the construction and operation of the proposed natural gas pipeline (proposed and alternate).

    Response: The City of Elk Grove currently follows the County of Sacramento's General Plan Policies and Zoning Ordinance and are not expected to have a separate general plan or zoning ordinance for 18 months to 2 years, minimum. No separate standards for the City of Elk Grove in siting gas lines exist. Attachment LU-57 is a record of conversation from Bill Campbell, a member of the planning staff at the City of Elk Grove.

58. Please provide figures similar to AFC Figure 8.4-1 for the entire natural gas pipeline route and alternate routes. Please also provide total approximate lengths of each alternative alignment.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being burdensome and irrelevant. However, the approximate lengths of each pipeline segment is provided in Table LU-58.

TABLE LU-58
Approximate Length of Alternative Gas Line Segments

Pipeline Segment	Miles	Meters
G1	25.7	41,354
G2	5.5	8,888
G3	10.2	16,475
G4	25.1	40,445
G6	6.0	9,596

59. Please provide a map similar to AFC Figure 6.1-1 with more roads and right-of-ways labeled to clearly discern the proposed and alternate routes described in the text in Section 6.2. Also show the City of Elk Grove City limit line.

Response: AFC Figure 6.1-1 has been enlarged to show the names of major roads. The figures are attached as Figures 6.1-1a to 6.1-1g.

BACKGROUND

The proposed site is designated Agriculture, with minimal parcel size of 80 acres (AG-80). The California Department of Conservation, Office of Land Conservation has prepared a rating system for land resources called the California Agricultural Land Evaluation and Site Assessment (LESA). The use of LESA criteria provides a methodology for assessing the potential environmental impact of state and local projects on agricultural lands and its conversion. LESA provides an approach for rating the relative quality of land resources based upon specific measurable features. The California LESA is composed of six different factors. Two Land Evaluation factors area based upon measures of soil resource quality. Four Site Assessment factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands.

DATA REQUEST

60. Please complete the California LESA application prepared by the California Department of Conservation, Office of Land Conservation, and provide the application and it's supporting documentation (i.e. maps, soil information,

cropping patterns, etc.) to the Energy Commission. The application can be found at http://www.consrv.ca.gov/dlrp/LESA/LESA.htm.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being redundant and burdensome.

BACKGROUND

The construction of the natural gas line is an important feature of this project since the proposed route is 26 miles long. More detailed information than provided on Figure 6.1.1 of the AFC is necessary to analyze the proposed and alternative natural gas pipeline alignments.

DATA REQUEST

61. For areas within ¼-mile on each side of the proposed and alternative natural gas pipeline ROW, provide a map illustrating each of the following:

    a. General plan land use designations,

    Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being burdensome and irrelevant.

    b. Zoning ordinance designations, and

    Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being burdensome and irrelevant. However, SMUD was able to obtain zoning information from the County on GIS and has provided a map of the zoning along the Gas Line. These maps are attached as Figures 8.4-2a to 2e.

    c. Existing land use types.

    Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being burdensome and irrelevant. However, SMUD agrees to provide maps of the existing land use types. These maps are included in as Figures 8.4-3a to 3e.

Attachment LU-57

CH2MHILL **TELEPHONE CONVERSATION RECORD**

Call To: Bill Campbell

Phone No.: (916) 361-8384 Date: July 17, 2001

Call From: Katy Carrasco Time: 02:51 PM

Subject: Applicability of Sacramento County General Plan and Zoning to Natural Gas Pipeline Siting in Elk Grove

I spoke with Bill Campbell, senior planner for the City of Elk Grove through Pacific Municipal Consultants. Mr. Campbell stated that the City of Elk Grove general plan and zoning is several months (minimally 18 to 24 months) away from being completed and that the County general plan and zoning are applicable to the City. I asked him if there were otherwise polices that the City had regarding the siting of natural gas pipeline and he said that there were not, other than County encroachment or private easement requirements. He stated that it was likely to be easier to site a pipeline in the far western and eastern portions of the City since those areas had not been developed as of yet. He stated that for specific siting assistance, it would be best to work through the County since the data and experience that the City has on existing utility lines is limited.

INSERT Figures 6.1-1a to 6.1-1g

INSERT Figures 8.4-2a to 2e

INSERT Figures 8.4-3a to 3e

Technical Area: Noise
CEC Author: Jim Buntin
CPP Authors: Mark Bastasch and Farshad Farhang

BACKGROUND

The applicant presumes that compliance with the 45 dBA criterion of the LORS will be sufficient to avoid a significant noise effect, mitigated by the offer to provide additional sound insulation for affected residences. The applicant's data indicates compliance with the 45 dBA criterion would result in an increase of about 11 dBA to 17 dBA, based upon the L_{90} values measured at Site M1 during the quietest hours of the day and night. This will be excessive in terms of producing a significant change in background noise levels, as the Energy Commission staff has concluded that a potential for a significant noise impact exists where the noise of the project plus the background exceeds the background by 5 dBA L_{90} or more at the nearest location where the sound is likely to be perceived.

However, staff will carefully consider the question of establishing a reasonable and practical noise standard for very quiet environments. With this in mind, it will be useful to know the practical effects of setting a noise standard which allows an increase in background noise levels greater than 5 dBA, while limiting the noise level to the maximum practical extent. For example, the Model Community Noise Control Ordinance prepared by the State Office of Noise Control suggests a nighttime exterior noise level standard of 40 dBA for rural suburban land uses.

DATA REQUEST

62. Please provide an acoustical analysis to address compliance with a noise standard of 40 dBA L_{90} at the nearest residences. Include a listing of any additional required noise control measures.

    Response: This question will be responded to on February 4, 2002.

63. Please provide a map or a listing showing the sensitive receptors that are predicted to be exposed to construction noise levels which exceed the typical daytime ambient L_{90} values by 5 dBA.

    Response: Figure NO-63 presents generalized noise contours during the Site Clearing and Excavation Phase (Tables 8.5-6 and 8.5-7 of the AFC). Figure NO-63 includes the atmospheric and ground absorption effects. Average daylight (7 am to 7 pm) L90 was 33 dBA. Sound levels will vary depending on the type, number and location of equipment.

64. Please provide a map or a listing showing the sensitive receptors that are predicted to be exposed to plant operation noise levels which exceed the typical quietest ambient L_{90} values by 5 dBA.

    Response: This question will be responded to on February 4, 2002.

65. Using the responses to the two previous questions, please address the question of whether the noise level data collected at site M1 reasonably represent the noise exposure at the residences affected.

Response: This question will be responded to on February 4, 2002.

BACKGROUND

The AFC indicates that pile driving is not currently anticipated. The AFC further states that pile driving, if required, would be at sufficient distance so that noise and vibration would not adversely affect the nearest residential receptors. Energy Commission staff is concerned that, if pile driving is later deemed necessary, adequate analysis be provided to ensure that there will be no significant noise or vibration effects.

DATA REQUEST

66. Please provide a description of potential locations for pile driving, and their proximity to residences, should pile driving be required.

Response: Potential locations for pile driving cannot be determined with precision until geotechnical studies and civil/structural engineering are complete. However, it can be reasonably assumed that there will not be the need for pile driving under the major equipment foundations.

BACKGROUND

The AFC indicates that horizontal drilling will be required for the gas line. The Sacramento County Code provides an exemption to the noise standards of Chapter 6.68 for construction during specific hours of the day. The Code further exempts an "unavoidable condition" occurring during a construction project "under conditions which will not jeopardize inspection acceptance or create undue financial hardships." Since horizontal drilling would be a 24-hour activity, it may be necessary to impose conditions upon this activity to minimize noise effects on residential receptors. To assess the potential for concern, it will be necessary to describe the locations where horizontal drilling will be required, and the amount of time required for such activity at each site.

DATA REQUEST

67. Please provide a description of potential locations where horizontal drilling may be required, and their proximity to residences.

Response: At this time, there are four potential horizontal directional drilling locations (reference AFC Figure 6.1-4):

- Cosumnes River Crossing (MP 12.39 to MP 12.87)
- UPRR Crossing (MP 13.28 to MP 13.61)
- Highway 99 Crossing (MP 14.11 to MP 14.35)
- Laguna Creek Crossing (MP 20.47)

These four locations are in agricultural and rural areas. The boring equipment location (or rig set up location) will be selected to avoid impacts to residences. At this time, it appears closest residence, at the Cosumnes River Crossing, will be about 300 yards from the actual boring operation.

68. Please describe typical time requirements for horizontal drilling at any one site.

Response: It is expected that each boring operation will take less than three weeks (mobilization to demobilization). However, the actual boring could be less than one week.

Insert Figure NO-63

Technical Area: Project Description
CEC Author: Kristy Chew
CPP Author: Kevin Hudson

BACKGROUND

AFC Section 2.4.3, Fuel Availability, states that there is only enough capacity through the interstate line and at the terminal supply for the first phase of the project and that a new line is required for the second phase.

DATA REQUEST

69. Please describe where the new natural gas line and any related facilities (e.g., compressor station) for the second phase would be located. Provide figures at a scale similar to AFC Figure 6.2-1 (approximately 1" = 3 miles) depicting the route of the new natural gas supply line and related facilities.

    Response: The primary plan for supplying natural gas to Phase II is through the existing and proposed 26-mile extension of the District pipeline, with pressure enhanced by compression. Since a suitable supply is available, a second pipeline is not necessary. Second phase compressor stations will be located at the PG&E lines 400 and 401 inter-tie at 27700B County Road 29 in Winters, California, and near the Carson Ice-Gen Plant, which is the originating point of SMUD's pipeline extension. The Carson compression station will be located at the valve and measurement crosstie number 190, which is located off of an access road from Franklin Boulevard near the Carson Ice Gen Plant.

70. Please provide a schedule for the construction of the new pipeline.

    Response: Since the second phase of the project can be served by SMUD's existing pipeline network and proposed 26-mile extension, a second pipeline is not necessary. Therefore, a construction schedule for a second pipeline is not needed.

71. Please explain when the information (biological surveys, cultural resource surveys, land uses etc.) required for evaluating the new pipeline will be provided.

    Response: Since the second phase of the project can be served by SMUD's existing pipeline network and proposed 26-mile extension, a second pipeline is not necessary. Therefore, information such as biological surveys, cultural resource surveys, and land uses is not needed.

72. Please explain why SMUD is not proposing to construct only one pipeline for both phases of the project.

Response: Recent calculations performed after the AFC was filed show the second phase of the project can indeed be served by SMUD's existing pipeline network and proposed 26-mile extension, with compression. A second pipeline was considered for enhanced reliability and redundancy for the plant, but this is speculative at this point.

Technical Area: Traffic and Transportation
CEC Author: James Fore
CPP Authors: Jeanne Acutanza and Joe Pennington

BACKGROUND

AFC Section 8.10.4.3 for the Cosumnes Power Plant (CPP) provides information on the truck route for hazardous material delivery to the plant site. The truck route described in the AFC does not indicate the roadway conditions or if there are any sensitive receptors in the area.

DATA REQUEST

73. Please specify the location of any sensitive receptors along the route such as schools, hospitals, commercial, or housing development that may be on the route and/or impacted by its operation.

Response: Figure T&T-73 identifies sensitive receptors within 3 miles of either side of the ammonia route, between Highway 99 and the plant site. There are four sensitive receptors in the town of Galt (about 2 miles south of Highway 99 and Twin Cities Road) and two sensitive receptors in the community of Herald, along Twin Cities Road.

BACKGROUND

The AFC for the CPP indicates that natural gas fuel will be supplied for the project from Pacific Gas and Electric (PG&E) pipelines 400 and 401 located near Winters. The CPP natural gas pipeline extension will originate at the Carson Ice-Gen Project near Elk Grove, with a 24-inch natural gas pipeline to the CPP. The pipeline route will be approximately 26 miles. The AFC provides information on the pipeline route, but does not indicate traffic conditions associated with the roadways impacted or what action will be taken to ensure minimal disruption to traffic along the route.

DATA REQUEST

74. Please provide information on the impact that the proposed PG&E pipeline extension will have on traffic associated with the various roadways involved for the proposed route as well as alternate routes. This would include:

    a. a description of the affected roadways,

    b. the current level of service (LOS) for roadways impacted by the pipeline route,

    c. the location of the pipeline within the roadway,

    d. the number of traffic lanes to be closed,

    e. the amount of roadway under construction at any one time.

    f. the impact on traffic flow,

g. anticipated traffic control measures that will be used, and

h. discussion of the type of construction activity.

Response: SMUD recognizes that construction in or near a roadway can be less than desirable since lane closures and traffic management are required. In recognition, the current pipeline alignment has been designed to minimize construction within existing roadway pavement. SMUD is pursuing easements for the pipeline on private property. However, crossing existing roadways cannot be avoided. SMUD is currently in the process of defining the exact location of the pipeline within the corridor identified on the AFC figures. At this time, the pipeline will cross the following roads as described:

Sims Road: The current LOS is A; the road will be open cut perpendicular to the direction of travel to allow placement of the pipe across the roadway; one traffic lane will be closed at a time; only the amount of the roadway necessary to accommodate the pipe installation will be under construction; there is no anticipated impact on traffic flow, and County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity in or alongside the roadway.

Dwight Road: The current LOS is A; the road will be open cut perpendicular to the direction of travel to allow placement of the pipe across the roadway; one traffic lane will be closed at a time; only the amount of the roadway necessary to accommodate the pipe installation will be under construction; there is no anticipated impact on traffic flow, and County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity in or alongside the roadway.

Franklin Boulevard at the railroad tracks south of Elk Grove Boulevard: The current LOS is B; the pipeline will cross underneath the roadway by jack and bore; no traffic lanes will be closed, no amount of the roadway will be under construction; there is no anticipated impact on traffic flow other than onlooker slowing, County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity along the side of the roadway.

Bilby Road east of the town of Franklin: The current LOS is A; the road will be open cut perpendicular to the direction of travel to allow placement of the pipe across the roadway; one traffic lane will be closed at a time; only the amount of the roadway necessary to accommodate the pipe installation will be under construction; there is no anticipated impact on traffic flow, County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity in or alongside the roadway.

Bruceville Road north of Eschinger: The current LOS is A; the pipeline will cross underneath the roadway by jack and bore; no traffic lanes will be closed, no amount of the roadway will be under construction; there is no anticipated impact on traffic flow other than onlooker slowing, and County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorist of construction activity along the side of the roadway.

Eschinger Road east of Highway 99: The current LOS is A; the road will be open cut perpendicular to the direction of travel to allow placement of the pipe across the roadway; one traffic lane will be closed at a time; only the amount of the roadway necessary to accommodate the pipe installation will be under construction; there is no anticipated impact on traffic flow, and County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity in or alongside the roadway.

Highway 99 at Arno Road: The current LOS is C. The pipeline will cross underneath Highway 99 by horizontal directional drilling. No traffic lanes will be closed, no amount of the roadway will be under construction; there is no anticipated impact on traffic flow; since the HDD apparatus is positioned away from the highway, there is no traffic control necessary.

Arno Road: The current LOS is A; the pipeline will cross underneath the roadway by jack and bore; no traffic lanes will be closed, no amount of the roadway will be under construction; there is no anticipated impact on traffic flow, County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity along the side of the roadway.

Oak Road: The current LOS is A; the road will be open cut perpendicular to the direction of travel to allow placement of the pipe across the roadway; one traffic lane will be closed at a time; only the amount of the roadway necessary to accommodate the pipe installation will be under construction; there is no anticipated impact on traffic flow, County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity in or alongside the roadway.

Alta Mesa Road: The current LOS is A; the pipeline will cross underneath the roadway by jack and bore; no traffic lanes will be closed, no amount of the roadway will be under construction; there is no anticipated impact on traffic flow, County-approved traffic control standards such as flaggers and

construction warning signs will be used to warn motorists of construction activity along the side of the roadway.

Twin Cities Road (Hwy 104) between Laguna Road and Clay East Road: The current LOS is A; the pipeline will be placed between the railroad tracks and the roadway, and there are no activities anticipated in the roadway; no traffic lanes will be closed; no amount of the roadway will be under construction; there is no anticipated impact on traffic flow, other than possible onlooker slowing; County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity alongside the roadway.

Clay Station Road: The current LOS is A; the pipeline will cross underneath the roadway by jack and bore; no traffic lanes will be closed, no amount of the roadway will be under construction; there is no anticipated impact on traffic flow, County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorists of construction activity along the side of the roadway.

Twin Cities Road (Highway 104) at Clay East Road: The current LOS is A; the pipeline will cross underneath the roadway by jack and bore; no traffic lanes will be closed, no amount of the roadway will be under construction; there is no anticipated impact on traffic flow other than possible onlooker slowing, County-approved traffic control standards such as flaggers and construction warning signs will be used to warn motorist of construction activity alongside the roadway.

In General: Most roadway crossings will be jack and bored; however, in consultation with the County of Sacramento, there may be roads with low levels of traffic where open cut is preferred. County permits will specify if the roadway can be cut. Where trenching is not allowed, the roadways will be bored. In roads where no lanes are closed, flaggers may still be present, if necessary, to assist trucks entering or exiting the roadway. This will be determined by County traffic control and permit requirements.

To allow flexibility and provide the best opportunity for an efficient installation, the pipeline construction contractor will be given the opportunity to obtain the excavation permit and the associated traffic control plan from the required agencies (Sacramento County). SMUD will work with county and city agencies to determine their traffic control plan requirements and excavation permit requirements – especially involving limitation on the working periods and amount of lane closures prior to the issuance of the construction contract (for bidding purposes). SMUD does not intend or expect any complete street closures.

BACKGROUND

AFC Section 8.10.3.2 identifies that Sacramento County has public transportation and bicycle routes throughout the county but does not indicate if the CPP will impact any of the facilities during construction or operation.

DATA REQUEST

75. Please supply information on any public transportation routes or services in the area that will be impacted. This would include bus routes and park and ride parking areas.

    Response: The gas line will cross Route 52 along at some point on Laguna Boulevard between Laguna Main Street and Franklin Boulevard. Route 52 operates five trips inbound from Elk Grove to Downtown Sacramento in the am. Route 52 operates one trip outbound from downtown Sacramento in the am and five trips outbound in the p.m. These are on normal weekdays only. the pipeline will cross underneath the roadway by jack and bore; no traffic lanes will be closed, no amount of the roadway will be under construction; there is no anticipated impact on BUS Service. There are no park and ride areas along the gas line that will be impacted.

76. Please identify any roadways with bicycle routes and the impact the construction and/or operation of the facility would have on the routes.

    Response: There are no bicycle routes along Twin Cities Road or Clay East Road.

77. If bicycle routes exist on any of the roadways impacted, indicate what steps will be taken by the applicant to ensure safe use of the affected bicycle facilities.

    Response: Not applicable.

BACKGROUND

AFC Section 8.10.4.2 indicates that roads referred to as the “primary roadways” to and from the project site (i.e., Clay East Road, Twin Cities Road and SR 99) will experience the greatest traffic volume. This section also indicates that existing vehicle occupancy levels are estimated to be 1.3 persons per vehicle during commute hours based on 1990 census data. The section also concludes that the project will result in minimum traffic impact for the area roadways, without indicating the trip distribution expected for the construction workforce.

DATA REQUEST

78. Please indicate the expected traffic route for the construction workforce along with the estimated volume of traffic associated with each route.

Response: Construction hours for the project are from 7:00 am to 3:30 pm. Therefore, LOS D or better is maintained in the p.m. peak hour with or without the project. Based on projected project traffic volumes, construction of the project may contribute to minor delays on the existing roadway network or affect traffic circulation in the area. However, the temporary nature of these potential construction-related impacts, combined with appropriate mitigation measures, should keep potential traffic impacts at a level of insignificance.

TABLE T&T-78
Peak Construction Project Traffic Volumes and LOS on Routes Used by Construction Workers

Route	Annual Average Daily Traffic [a]	Annual Average Peak Hour Traffic	Peak Project Construction Daily Traffic	Peak Hour Traffic plus Project	Existing LOS	LOS with Peak Project Construction
State Route 99	55,000	4,700 [a]	590	4,700	C	C
State Route 104/ Twin Cities Road	3,800	460 [a]	590	460	A	A
Clay East Road	N/A	50	590	50	A	A

[a] Caltrans, 2000.
N/A not available

79. Please provide information based on SMUD experience with construction projects to substantiate the assumption of 1.3 persons per vehicle.

Response: Within the past 8 years, SMUD has built 3 cogeneration plants in Sacramento County. As part of its commitment to lowering vehicle emissions and reducing traffic impacts in the area, SMUD has required its contractors to submit construction traffic control plans that encourage car-pooling. In addition, SMUD actively operates several vanpools for its employees to commute to major sites, including its downtown headquarters and Rancho Seco. It is also typical for journeyman craftsmen, such as machinists, boilermakers, and carpenters, to travel with an assistant or apprentice to jobsites. The combination of these activities assists in the assumption of 1.3 persons per vehicle.

BACKGROUND

AFC Section 8.10.4.2 indicates that the number of truck trips associated with construction material for the project are expected to be low, an estimated 10 trucks per day, with a maximum of 20 trucks daily. Later in the section additional truck trips are identified for the delivery of hazardous materials and the removal of waste for disposal.

It is not clear if the estimated 10 truck trips with a maximum of 20 truck trips, include only construction materials or all truck trips.

DATA REQUEST

80. Please provide a table indicating the number and type of truck trips per month that the project will generate during construction.

Response: The estimated number of trucks in Table T&T-80 includes those hauling hazardous materials, which are estimated not to exceed 20 trips daily during peak months.

TABLE T&T-80
SMUD Consumnes Power Plant Truck Trips Estimate by Month of Project

Phase I																								
MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
# TRUCKS	8	14	30	37	47	49	67	106	143	179	193	207	200	178	149	149	149	116	116	91	91	50	18	11
Phase 2																								
MONTH	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44						
# TRUCKS	30	38	40	54	86	116	145	156	167	161	144	121	121	121	94	94	74	41						

BACKGROUND

The AFC does not indicate if the project will have an impact on air traffic. There are several local landing strips for small airplanes located throughout Sacramento County. The Sunset Skyranch Airport is one example located northwest of the CPP.

DATA REQUEST

81. Please supply location information (i.e., addresses, or location near mapped roads) for airport facilities in the area.

Response: The nearest airport is the Lodi Airport located at 23987 N. Highway 99, Acampo, CA (at Peltier Road and Hwy 99). It is more than 10 miles (8.7 nautical miles) from the site. Sunset Skyranch Airport is located in Elk Grove, CA south of the intersection of Grant Line Road and Bradshaw Road. This landing strip is located more that 12 miles (10.4 nautical miles) from the site.

82. Please discuss the steps the applicant will take to ensure that the power plant's stacks do not present a traffic hazard to these local airports.

Response: The neighboring Rancho Seco plant has two prominent hyperbolic cooling towers approximately 426 feet tall with FAA warning lights. The CPP stacks will be about 160 feet tall. The area surrounding CPP is used for open

grazing land and does not use crop dusting or other aerial services. Presently, air space around Rancho Seco is restricted. According to FAA regulations (14 CFR 77.23), a structure needs to be more than 200 feet above ground level or within 3 nautical miles of an airport to be of concern. Therefore, due to the distance from these airports and the height of the plant's tallest structures, there is no hazard to air traffic from CPP.

BACKGROUND

AFC Section 8.11.5.3.3 indicates the potential for vapor plumes to be emitted by the facility. There is a potential for visibility impairment to traffic due to vapor plumes produced by the project reaching ground level, or casting shadows that could cause drivers to be temporarily blinded by a sudden change in light intensity. This may affect traffic safety on the local roadways in the vicinity of the project site.

DATA REQUEST

83. Please provide information based on your plume analysis for:
    a. the roadways that might be impacted,
    b. the expected frequency and duration of traffic impacts from ground fog or shadows, and
    c. the traffic safety issues resulting from the plumes.

    Response: This question will be responded to on January 18, 2002.

84. Please discuss the applicant's plans for mitigating any traffic safety and visibility impacts caused by vapor plumes.

    Response: This question will be responded to on January 18, 2002.

BACKGROUND

AFC Section 6.0 describes the proposed natural gas pipeline route as using the Western (Union) Pacific Railroad right-of-way (ROW).

DATA REQUEST

85. Please provide a description of the coordination efforts with Union Pacific Railroad for ROW approval. Also provide contact information for the Union Pacific Railroad staff coordinating the ROW approval.

    Response: SMUD will be contacting the Union Pacific Railroad for information along the railroad corridors and for ROW approval once a more precise pipeline alignment has been determined. Three primary contacts are Kevin McQuitty (916) 789-5311; Ernestine Burtley (402) 997-3601; and Mike Cassey (916) 491-3055.

Insert Figure T&T-73

Technical Area: Transmission System Engineering
CEC Author: Laiping Ng
CPP Author: Gil Butler

BACKGROUND

On page 2 of the Cosumnes Power Plant Transmission System Impact Study (SIS), it states that "the proposed Roseville and Colusa generation projects were not included". The Colusa Power Plant and the Roseville Power Plant are proposed to be online/operational by the second quarter 2002 and the fourth quarter 2004, respectively. The Cosumnes Power Plant is proposed to be online during the first quarter of 2005 for Phase I and by first quarter 2008 for Phase II. Staff needs additional documentation and information regarding the System Impact Study for the year 2007 and proposed mitigation measures in order to prepare the Staff Assessment for the Cosumnes Power Plant.

DATA REQUEST

86. Please include the Colusa and Roseville projects in the SIS. Analyze the system impact with and without the project during peak and off-peak system conditions, which will demonstrate conformance or non-conformance with the WSCC and NERC reliability and planning criteria with the following provisions:

    a. Identify major assumptions in the base cases including imports to the system, major generation and load changes in the system and queue generation.

    b. Analyze system for N-0, important N-1 and critical N-2 contingency conditions and provide a list of criteria violations in a table showing the loadings before and after adding the new generation.

    c. Provide a list of contingencies evaluated for each study.

    d. Provide power flow diagrams (MW, % loading & per unit voltage) for base cases with and without the project. Power flow diagrams must also be provided for all N-0, N-1 and N-2 studies where overloads or voltage violations appear.

    e. List mitigation measures considered and those selected for all criteria violations.

    f. Provide electronic copies of *.sav and *.drw PSLF files.

    Response: This question will be responded to on February 4, 2002.

Technical Area: Visual Resources and Plumes
CEC Authors: Michael Clayton and William Walters
CPP Author: Wendy Haydon

BACKGROUND

Staff will need to make use of the Applicant's figures presented in the AFC and supplemental filings.

DATA REQUEST

87. Please provide three sets of electronic files on CDs of the following figures or their revisions: 1.1-2, 1.1-3, 1.1-4, 1.1-5, 2.2-2, 2.2-3, and all figures contained in the Visual Resources Section of the AFC.

    Response: This question will be responded to on February 4, 2002.

88. Please provide three sets of electronic files on CDs of the revisions to existing figures and new figures as requested in the following Data Requests.

    Response: This question will be responded to on February 4, 2002.

BACKGROUND

Natural gas for the facility would be delivered by a 26-mile pipeline, extending west and then north from the project site to the Carson Ice-Gen Facility. The pipeline route would pass through areas that are characterized as urban residential, rural residential, light industry, agriculture, and open space (AFC p. 8.11-3).

DATA REQUEST

89. Please explain whether or not any aboveground facilities would be required for the gas pipeline including pump stations and/or valves. If so, please identify their locations and describe the facility characteristics including dimensions.

    Response: Shut-off valve stations within certain spacing parameters are required by Federal DOT Standards. At this time, SMUD plans to design and construct three valve stations, one interconnection station (to the existing SMUD pipeline) and one measurement station for the first phase. The exact location of the stations is still under investigation; however, it appears that the they will located generally as follows:

    Interconnection Station -- This station will occupy a net usable lot 75 feet by 75 feet on the southwest corner of Laguna Station Road and Glacier Road, Sacramento County California. Station facilities include above ground valves, buried valves with elevated stems, a pipeline blow down stack, a pig launcher, and control equipment.

Valve Station 1 -- This station will occupy a net usable space of 50 feet by 50 feet on the west side of Bruceville Road, approximately 0.5 mile north of Eschinger Road, Sacramento County, California. Station facilities include, buried valves with elevated stems, a pipeline blow down stack and control equipment.

Valve Station 2 -- This station will occupy a net usable space of 50 feet by 50 feet on the north west corner of Arno and Valensin Road, Sacramento County, California. Station facilities include buried valves with elevated stems, a pipeline blow down stack and control equipment.

Valve Station 3 -- This station will occupy a net usable space of 100 feet by 100 feet on the southwest corner of Valensin and Alta Mesa Roads, Sacramento County California. Station facilities include above ground valves, buried valves with elevated stems, a pipeline blow down stack, a pig launcher and control equipment.

Measurement Station -- This station will occupy a 100-foot by 100-foot net usable space at the Cosumnes Power Plant site, as shown on AFC Figure 2.2-1. Station facilities include above ground valves, buried valves with elevated gearing, a pipeline blow down stack, pig receiver, metering equipment and control equipment.

Compressor Station at Winters, CA (second phase) -- A compressor will be installed within the existing inter-tie station located at 27700B County Road 29 in Winters, CA. The compressor is anticipated to be skid mounted, approximately 10 feet x 20 feet x 8 feet high, within a slatted fence enclosure.

Compressor Station at Carson Ice Generation Plant (second phase) -- A compressor will be installed at the existing inter-tie located the crosstie measurement and valve number 190, which is located on an un-named access road between Franklin Boulevard and the Carson Ice-Gen Plant. The compressor is anticipated to be skid mounted, approximately 10 feet x 20 feet x 8 feet high, within a slatted fence enclosure.

At the interconnection and valve stations, all valves will be below ground. The only items to be above ground will be the high head extensions for the valves (about 3.5 feet above the ground surface), a blow off stack (about 8 feet above the ground surface and up to 10 inches in diameter), and a Remote Terminal Unit (RTU) for the SCADA (a metal box about 3 feet x 3 feet x 4 feet tall). The RTU will be enclosed in a 5-foot x 8-foot x 8-foot structure. At the interconnection, there will also be a launcher for pigging operation. The launcher station is about 10 feet x 10 feet x 5 feet tall). Each net usable space will be enclosed by a slatted, 6-foot cyclone fencing and topped with barbed wire.

The slats will be tinted to blend with the surrounding background of each area.

At the measurement station, all valves will be above ground with the exception of a single inlet isolation valve. There will also be a receiver for pigging, filters and metering equipment. CPP site fencing will enclose the measurement station.

90. Please identify the number of residences that would have views of the pipeline route during construction and the proximity of those residences to the route.

Response: There are approximately 528 residences located along the 26-mile pipeline that are within 500 feet of the pipeline alignment. It is likely that fewer than the 528 residences would have a view of pipeline construction because of the distance of the residence to the pipeline, the elevation of residences relative to the pipeline, the orientation of the residence relative to the pipeline, weather conditions, and whether there is vegetation, fencing, or other structures that would obstruct views from the residence.

91. For a typical pipeline construction spread, please describe the construction equipment to be used, the length of a typical spread, and the amount of time a typical spread would be visible at any one location along the route.

Response: The typical construction equipment that will be used include:

- Backfilling equipment (bulldozer, backhoe, etc.)
- Boom trucks (for lifting pipe)
- Excavation equipment (shovel, clamshell digger, backhoe, etc.)
- Material Delivery trucks (dump, flat bed, etc.)
- Welding Trucks
- Inspection Vehicles

In traffic areas the spread will be less than 500 feet, and in rural or agricultural areas the spread will depend on safety and construction efficiency. The exception is if County or City agencies request greater lengths to be used to accelerate the project schedule.

Generally, the speed of construction is 100 feet to 500 feet per day, depending upon width of construction easement, equipment type, soil, and weather conditions.

Depending on the distance of the residence to the pipeline, the elevation and orientation of the residence relative to the pipeline, weather conditions,

whether there is vegetation, fencing, or other structures that obstruct views, and given an average speed of construction of 100 to 500 feet per day, pipeline construction could potentially be viewed from residences for 1 to 7 days with decreasing levels of visual clarity as the distance to construction activities increases.

BACKGROUND

Water for the proposed project would be obtained from an existing pipeline from the Folsom-South Canal (AFC p. 8.11-7) and would not require off-site pipeline construction. However, a package water treatment plant would be required to treat the water from the canal (AFC p. 1-1).

DATA REQUEST

92. Please identify the location of the package water treatment plant and describe its visual character including physical dimensions.

Response: The package water treatment plant will be located inside the D.I. water treatment building, identified as item number 26 on AFC Figure 2.2.1. Because its location will be internal to the water treatment building, the package water treatment plant will have no impact on CPP's air modeling results, nor will it impact the visual resources of the CPP site or vicinity.

BACKGROUND

As noted in the AFC (p. 8.11-1), the proposed project site is located immediately south of the Ranch Seco Power Plant.

DATA REQUEST

93. Please identify the height of the existing transmission towers that would be paralleled by the proposed transmission towers. The referenced towers are visible in the existing conditions photograph for KOP 1, which is presented in the AFC as Figure 8.11-2a.

Response: District personnel surveyed the towers and determined that the tallest one was 138 feet.

BACKGROUND

Figure 2.2-2 provides elevation views of the proposed project but does not show structure heights except for the HRSG stacks (though structure heights are provided in a data adequacy response).

DATA REQUEST

94. Please revise Figure 2.2-2 to specify structure heights.

Response: This question will be responded to on January 18, 2002.

BACKGROUND

Four key observation points (KOPs) were established in order to evaluate both the visual setting and the potential for project-induced visual impacts. Photographs were obtained at each KOP and presented along with visual simulations of the proposed project. In order to accurately represent the views that would be experienced at each KOP, staff considers 18 inches to be an appropriate reading/viewing distance for all KOP images. However, the images presented (setting photographs as well as simulations) are presented at less than life-size scale when viewed at the 18-inch reading/viewing distance. Although reading/viewing distances of 12 and 13 inches are specified for the images presented in the AFC, the images are still approximately 10 to 15 percent undersized based on field verification. The presentation of images at a reduced scale understates the prominence of visible landscape features as well as potential visual impacts.

DATA REQUEST

95. Please re-scale the setting and simulation images for KOPs 1 and 2 to achieve life-size scale when viewed at a standard reading/viewing distance of 18 inches. If re-scaling results in substantial degradation of the image, please provide new high resolution setting and simulation images at life-size scale. After obtaining appropriately scaled images, please provide five photocopies of high quality 11"x17" color images of the existing views and simulations.

Response: This question will be responded to on February 4, 2002.

BACKGROUND

Figure 8.11-2b provides a simulation of the proposed project as viewed from KOP 1. However the simulation shows the previously proposed H-frame transmission structures and not the currently proposed tubular style.

DATA REQUEST

96. Please revise Figures 8.11-2b (KOP 1) and 8.11-3b (KOP 2) to show the currently proposed tubular transmission towers.

Response: This question will be responded to on February 4, 2002.

97. Please specify the heights of the currently proposed tubular transmission towers.

Response: As shown in AFC Figures 5.3-4a and b, the height of the pole will be between 100 and 125 feet depending on final design details, such as pole

spacing and topography. Likewise, tapered pole diameters are also provided on the drawings.

BACKGROUND

Section 8.11.4.3.2 addresses the project landscaping that is to be installed along the southern perimeter of the project site but provides minimal description of the landscaping including the species to be planted and times to maturity. Figure 8.11-2b provides a simulation of the proposed landscaping at 20 years from KOP 1. The landscaping along the southern perimeter of the site is ineffective in screening project structures from nearby residential views. Also, it should be noted that staff considers any project-induced visual impact extending beyond five years after completion of project construction to be a long-term visual impact.

DATA REQUEST

98. Please provide additional detail about the landscape plan including species to be planted and times to maturity.

Response: Landscaping along the southern plant perimeter, in a 25-foot corridor between the fence and Clay East Road, will be consistent with Sacramento County Policies PF-71, PF-72, PF-112 and PF-113 as summarized in AFC Table 8.11-2. Also, the Sacramento County General Plan Conservation Element CO-114 encourages revegetation of native plant species and avoiding non-indigenous species. The evergreen Interior Live Oak (Quercus wislizenii) and deciduous Valley Oak (Quercus lobata) are two drought-tolerant tree species native to the local region that are being considered. The Valley Oak was chosen because it is already found several hundred feet to the west of the site, and this species would help retain its natural occurrence in the area. The Valley Oak exhibits moderate growth at 24 to 36 inches per year, with a maximum height of 30 to 75 feet. Assuming trees are 5 feet tall when planted, they would reach a height of 15 to 20 feet in 5 years. The Interior Live Oak grows 12 to 24 inches per year and reaches heights of 20 to 40 feet. At 5 years, the Live Oak reaches the height of about 15 feet. In addition to these native trees, the evergreen California Pepper (Schinus molle) is a fast growing tree that tolerates high heat and drought, grows quickly at a rate greater than 36 inches per year, and reaches heights of 25 to 50 feet. In 5 years, the tree would be about 20 feet tall. The trees would be interspersed, creating an interesting mix of fast growth and evergreen characteristics with indigenous species highly desirable for wildlife. Spacing between these 3 tree species would be about 18 to 20 feet apart. At this spacing, approximately 50 trees would be planted. The trees would be irrigated until established with a timed irrigation system to ensure suitable growth.

99. Please provide a revised landscape plan to include landscape screening along the western perimeter of the site.

Response: Landscaping has not been proposed along the western perimeter of the site for several reasons:

- Re-alignment of an ephemeral swale is proposed along the outer western edge of the site. Landscaping in or along the restored ephemeral swale is inconsistent with Sacramento County General Plan Conservation Element CO-112 that requires preserving the ecological integrity of the preexisting stream and CO-117 that requires a buffer zone between the stream and any existing or planned riparian or wetland vegetation. Planting trees or shrubs in this zone could interfere with the biological preservation and conformance to County Ordinance.
- The plant's western perimeter is an electrical switchyard that is approximately 50 feet east of existing transmission towers and power lines. The area underneath the transmission lines and to the sides must comply with CPUC GO-95, "Rules for Overhead Electric Line Construction". Compliance with these orders and good engineering practice would be inconsistent with planting trees or shrubs that could present a fire hazard or interfere with safe operation of electrical features.
- The County of Sacramento Planning and Community Development Department reviewed consistency of the project, including landscaping plans, and reported their findings to the Sacramento County Board of Supervisors on December 5, 2001. The proposed landscaping along the southern perimeter was sufficient, upon review of the actual landscaping plans, to comply with County Ordinances.

100. For KOPs 1 and 2, please provide five photocopies of high-resolution 11"x17" color images of life-size scale simulations of the revised landscape screening vegetation along the western perimeter at five years of growth and 20 years of growth.

Response: Landscaping along the western plant perimeter is not proposed (see Data Response 99). Therefore, visual simulations of these features are not being provided.

BACKGROUND

The AFC discusses the need for project night lighting and the controls that would be utilized to minimize the visibility of night lighting (AFC p. 8.11-9). The AFC also states that the current lighting levels at the Rancho Seco Power Plant are approximately 75 percent of the operating plant lighting level. However, the discussion of lighting does not describe the extent to which existing night lighting is visible from nearby viewing locations or the extent to which proposed project night lighting would be visible to those same locations.

DATA REQUEST

101. Please describe existing visible night lighting at the project site and the Rancho Seco Power Plant.

Response: There is currently no night lighting at the project site. The project site is currently undeveloped. Night lighting at the Rancho Seco Plant (RSP) site consists of red flashing lights atop the two 426-foot-high cooling towers, red non-flashing lights on the cooling towers at heights of approximately 180 feet and 270 feet, and a combination of orange-colored and white lights on poles and mounted on buildings/facilities. A faint glow, from the lighting at the plant, can be seen in the sky above the Rancho Seco Power Plant. There is also a street light at the nearest utility pole at the driveway to the trailer located closest to the plant.

102. For KOPs 1 and 2, please provide photocopies of high-resolution 11"x17" color images of life-size scale existing nighttime setting photographs to show existing night lighting levels at the project site and Rancho Seco Power Plant.

Response: See Figures 8.11-2c and 8.11-3c showing nighttime views of the Rancho Seco Power Plant from KOPs 1 and 2, respectively.

103. Please describe the extent to which night lighting during project operation would be visible from each KOP. Also, please describe the visibility of project components (including exhaust stacks and vapor plumes) due to illumination from: a) existing ambient lighting and b) the combination of existing ambient lighting and proposed project lighting.

Response: Viewers at KOP 1, because it is the closest to the project site, would have the most direct, and closest, nighttime view of the CPP project. Viewers at KOPs 2 and 3 would also be able to see the CPP facility with night lighting, but at a greater distance, and the clarity of each individual project feature would diminish with distance. This diminishing clarity is demonstrated in the daytime simulations that were prepared for KOPs 1, 2, and 3 (Figures 8.11-2b, 3b, and 4b). At night, it is expected that silhouettes of these facilities (if they have mounted lights or are near light poles) would be partially visible, but that unlit facilities would essentially disappear in the darkness.

Because the lights would be directed downward, illumination of visible plumes from mounted lights or light poles is expected to be minimal. It is, however, expected that CPP project lighting may produce a faint nighttime sky glow during periods of high humidity, and the plumes could be visible in the sky glow. The expected nighttime sky glow would be similar to what is seen at RSP, but to a lesser degree, because of the smaller plant size, the use of directional lighting, and the use of switches and timers for the lights.

Nighttime views of the CPP project from KOP 4 would be minimal, as is demonstrated by what would be seen during the daytime in Figure 8.11-5b. It is possible that a faint sky glow would be visible from KOP 4 (the picnic area at Rancho Seco Park); however, the park closes at dusk and the gate is locked, so viewers from outside the park would not have nighttime access to the picnic area after dark. Recreationists camping at the park would still have access to the picnic area after dark; however, the picnic area is not lit at night, and in fact, the area is very dark, so recreationists would not likely be at the picnic area to see the CPP project's sky glow from this KOP.

Because the RSP facilities are located approximately 1,000 feet north of the project site, existing RSP lighting is not expected to significantly illuminate CPP project facilities, nor would it significantly combine with CPP project lighting to illuminate project components.

104. Please identify whether or not facility stack lighting would be required and if so, by which agency or requirement, and in what manner.

Response: The agency determining the requirement for lighting the facility stack is the Federal Aviation Administration (FAA). The FAA has indicated that stack lighting is not required on structures less that 200 feet tall that are more than 3 nautical miles from an airport (Karen McDonald, pers. comm., 2001). (See also, Data Response #82). Sacramento County would not require stack lighting for the project, but would defer to the FAA for its lighting requirement (Tricia Stevens, pers. comm., 2001).

105. Please describe night lighting to be used during project construction.

Response: The vast majority of project construction would occur during the daytime. Nighttime construction may, however, occur if requested by the County for pipeline trenching in/near roadways for traffic management purposes (to avoid traffic congestion), and for horizontal directional drilling (HDD) of the pipeline, which, once started, would continue 24 hours a day until that drill is completed.

During this nighttime construction, the District would use standard white construction lights that would be approximately 6 to 8 feet tall and would be directed toward the construction site and the particular construction activity, rather than directed off-site.

BACKGROUND

The AFC discusses the formation of water vapor plumes associated with the proposed project (AFC pp. 5.12-15 and 13) but does not identify whether or not there are any existing sources of plumes in the immediate project vicinity or region.

DATA REQUEST

106. Please verify if there are any other plume sources within five miles of the proposed project site. If plume sources exist, then please describe them and provide a map with the plume locations indicated.

Response: The Applicant has not observed any plume sources within the vicinity of the CPP plant site.

BACKGROUND

AFC Section 8.11.5.3.3, pp. 8.11-12,13, states that the plume frequency of the project would be minimal. However, no further information is given to substantiate that claim. Staff requires cooling tower and HRSG operating data to model the plume frequency and plume dimensions to determine the potential significance of the project's visible water vapor plumes.

DATA REQUEST

107. Please complete the following table of operating parameters for the cooling tower:

Table 1

Parameter	Value
Maximum Design Inlet Air Flow Rate (kg/s)	7.2
Maximum Heat Rejection Rate (MW)	335.6
Design Liquid to Gas (L/G) Mass Ratio	1.10

Response: The values have been added to the table.

108. Please provide, at a minimum, the operating exhaust temperatures and exhaust flows from the cooling tower that correspond to the following ambient conditions *(a similar set of ambient conditions may be substituted for the values specified as long as they represent the range of ambient conditions expected at the site).* The values presented should correspond to maximum anticipated heat rejection at the specified ambient conditions.

Table 2

Ambient Condition	Exhaust Flow Rate (lbs/hr/cell)	Exhaust Temperature (°F)
Full Turbine Load		
20°F, 90% RH		
20°F, 60% RH		
20°F, 30% RH		
50°F, 90% RH		
50°F, 60% RH		
50°F, 30% RH		
80°F, 90% RH		
80°F, 60% RH		
80°F, 30% RH		

Response: The requested information is available only for those operating conditions presented in the following Table VR-108.

TABLE VR-108
Cooling Tower Parameters for Visible Water Vapor Plume Modeling

Case	Ambient Temp (°F)	Ambient RH (%)	Turbine Load	Duct Burners	Inlet Fogging	PAG Steam Injection	Mass Flow Lbs/hr/cell	Exhaust Gas Temp (°F)
1	104°F	17%	100%	N/A	On	N/A	6,393,000	91°F
2	61°F	59%	100%	N/A	Off	N/A	6,865,000	79°F
3	34°F	90%	100%	N/A	Off	N/A	7,225,000	68°F

109. For staff to conduct CSVP modeling of the plume abated HRSG exhaust, please provide, at a minimum, HRSG exhaust parameter data to complete the following table *(a similar set of ambient conditions may be substituted for the values specified as long as they represent the range of ambient conditions expected at the site)*. The values must correspond to full turbine load operating conditions at the specified ambient conditions.

Table 3

Ambient Condition	Moisture Content (% by weight)	Exhaust Flow Rate (lbs/hr)	Exhaust Temperature (°F)
Full Turbine Load, including Inlet Air Fogging for appropriate ambient temperatures			
20°F, 90% RH			
20°F, 60% RH			
20°F, 30% RH			
50°F, 90% RH			
50°F, 60% RH			
50°F, 30% RH			
80°F, 90% RH			
80°F, 60% RH			
80°F, 30% RH			
50% Turbine Load, including Inlet Air Fogging for appropriate ambient temperatures			
20°F, 90% RH			
20°F, 60% RH			
20°F, 30% RH			
50°F, 90% RH			
50°F, 60% RH			
50°F, 30% RH			
80°F, 90% RH			
80°F, 60% RH			
80°F, 30% RH			

Response: The requested information is available for the operating conditions presented in the following Table VR-109.

TABLE VR-109
HRSG Parameters for Visible Water Vapor Plume Modeling

Case	Ambient Temp (°F)	Ambient RH (%)	Turbine Load	Duct Burners	Inlet Fogging	PAG Steam Injection	Exhaust H_2O Wt %	Mass Flow Lbs/hr	Exhaust Gas Temp (°F)
1	104°F	17%	100%	N/A	On	N/A	6.26%	3,469,410	189°F
2	61°F	59%	100%	N/A	Off	N/A	5.29%	3,604,224	185°F
3	34°F	90%	100%	N/A	Off	N/A	5.01%	3,750,308	182°F

110. Please identify the minimum ambient temperature where inlet air fogging will be used.

Response: The inlet air fogging system will only be used when peak power generation is required. Thus, it is not likely to be used during the ambient conditions when visible plumes have the potential to form.

Insert Figures 8.11-2c and 8.11-3c

Technical Area: Water and Soil Resources
CEC Authors: Philip Lowe, P.E., Greg Peterson, P.E., & Richard Latteri
CPP Author: EJ Koford

BACKGROUND

According to the AFC, the proposed Cosumnes Power Project (CPP) will require approximately 8,000 acre-feet of water in a typical year with peak annual demands as high as 9,000 acre-feet per year. During normal operation, 97 percent of the total water requirements for the CPP are for cooling water. The Sacramento Municipal Utility District (SMUD) intends to use high quality American River water from the Folsom South Canal for cooling purposes. Such use of fresh water for cooling purposes is discouraged in accordance with the California Water Code.

Alternatives to wet cooling and other sources of water supply must be more fully evaluated. The AFC provides only a limited discussion of alternatives (AFC pages 7-7 and 7-8) relating to State Water Resources Control Board's Resolution 75-58. The use of inland wastewater from the Galt Wastewater Treatment Plant (GWTP) and the Sacramento Regional Wastewater Treatment Plant (SRWTP) were rejected in the AFC as environmentally unacceptable and economically unsound but there is no information provided as to what the actual environmental impacts and costs would be, and why these were considered prohibitive. State Water Resources Control Board (SWRCB) Policy 75-58 requires studies to include analysis of cost and benefits of alternative supplies (that are reasonably available) and cooling alternatives.

The applicant's proposed use of wet cooling with 3 to 10 cycles of concentration results in significantly greater consumption of a high quality surface water and effluent discharge than comparable power generating facilities. These impacts can be reduced with higher cooling tower concentration cycles and/or other water conservation alternatives. A more thorough assessment of alternatives is needed. In addition, the applicant does not yet have a U.S. Bureau of Reclamation (USBR) contract for Central Valley Project (CVP) water after 2012, and the USBR is currently preparing an Environmental Impact Statement on the use and allocation of American River water, and thus availability is not yet assured for the life of CPP.

Surface water requirements can be reduced with the use of reclaimed water, as well as with the use of cooling alternatives. An assessment of alternatives, as required by California Water Code Section 13550 et seq. and SWRCB Policy 75-58, will help show the most effective method to reduce make-up water requirements.

APPLICANT'S CLARIFICATION TO BACKGROUND STATEMENTS

The Background improperly relies upon State Water Resources Control Board ("State Board") Resolution No. 75-58 as being applicable in this context. Resolution 75-58 discourages the use of fresh water for industrial processes, instead encouraging the use of recycled water. However, Resolution 75-58 applies to applications before the State

Board only in two particular situations: (i) when an applicant has applied for a new water right, or to change the place of use, point of diversion, or purpose of use of an existing water right; and (ii) when an applicant has applied for a permit to discharge water.

Here, SMUD does not need to apply to the State Board for a new water right (or for a change in place or use, purpose of use, or point of diversion) because SMUD holds the existing entitlements to water needed for this project. Therefore, as a new right is not being requested, and as no permissions from the State Board are needed in order to utilize the existing entitlements, the policy of Resolution 75-58 which discourages the issuance of new rights for the use of fresh water does not apply in this case. And while SMUD does need to apply for and receive a discharge permit to discharge effluent, only the discharge portions of Resolution 75-58 are applicable.

It is also important to note that the policies behind Resolution 75-58 do not apply in this case. Those two policies are (i) to ensure adequate fresh water supplies for irrigation, and (ii) to ensure adequate Delta flows. In the case of the Cosumnes Power Plant, the cooling water discharged from the Plant is used by downstream irrigators under contract. And after these irrigators have used the water it flows further downstream where it is discharged into the Delta. Thus, the policy reasons behind Resolution 75-58's discouragement of the use of fresh water for industrial processes do not apply in this case.

The Background also states that SMUD "does not yet have a U.S. Bureau of Reclamation (USBR) contract for Central Valley Project (CVP) water after 2012 . . and thus availability is not yet assured for the life of CPP." It is true that SMUD's existing contract expires in 2012. However, federal law ***mandates*** that the USBR must renew that contract at SMUD's request. *See* Act of June 21, 1963, § 1, Pub.L.No. 88-44, 77 Stat. 68. In addition, this right of continual renewal has been recognized by the USBR in the draft renewal contract currently under negotiation between SMUD and the USBR. (*Copy available from SMUD or USBR*). Lastly, a "Water Needs Analysis" conducted by the USBR has confirmed that SMUD has the need for the water entitlements held under its contract, and thus that the water is available in a renewal contract with USBR. Thus, the availability of the CVP water is assured for the life of the CPP.

The Background also relies upon California Water Code Section 13550 for justification for an assessment of alternatives. Section 13550 is inapplicable to CPP, as the water taken from the Folsom-South Canal and used for cooling purposes (and the boiler cycle) is not potable water. Rather, it is high quality raw water that has not been treated for potable uses.

DATA REQUEST

111. Please provide details on the feasibility of alternative water supply and cooling methods in comparison to the proposed use of Folsom South Canal water. The analysis should include, as a minimum:

a) The use of treated wastewater from the GWTP and SRWTP;

Response: SRWTP is approximately 26 miles and GWTP is approximately 12 miles from CPP, requiring substantial infrastructure to deliver and treat at an increased cost. While SRWTP would have suitable volume to supply CPP, SRWTP is currently not a purveyor of water and the quality, reliability, and availability of treated wastewater is uncertain. GWTP may not provide suitable volume to CPP under certain conditions, and would be an unreliable source. The use of wastewater for cooling has implications for waste management, in that disposal would not be possible in the vicinity of the project, without substantial treatment and cost. Additions to plant infrastructure would most likely be required to treat both supply and discharge water. It is likely that water consumption would increase from use of this lower quality water. Due to the parasitic loads of additional equipment, a drop in plant efficiency would be expected.

b) Drilling an onsite supply well;

Response: Ground water using an onsite supply well was dismissed as an alternative for CPP. AFC section 9.2.2.3.14 Water Resources, briefly discusses the overdraft or near-overdraft condition of groundwater in Sacramento County. AFC section 8.14.3.2 discusses groundwater conditions in detail. According to a 1994 SMUD study, it was found that groundwater levels near the proposed CPP have been dropping approximately 2 feet per year since 1976, with potable water at depths of 230 to 350 feet. This area is considered by Sacramento County to be in one of the three major problem areas for groundwater overdraft in the county. Recharge areas usually exist along active significant stream channels with sands and gravels. Only limited areas near the Rancho Seco property have moderate recharge capability, and most of the site is characterized as having poor recharge capability because of clay or hardpan soils. Due to these conditions, study in the use of an onsite supply well for groundwater was not pursued.

c) Imported brackish or irrigation return water;

Response: The nearest supply of brackish water to the proposed project site would be near Antioch, more than 50 miles west of the project, requiring substantial additional linears facilities and plant infrastructure to deliver and treat. The resulting waste product would similarly require transport at least 50 miles for disposal.

Flood irrigation of the type that yields irrigation return water is not common in the project vicinity. The nearest source of substantial return water would probably be in the vicinity of Lodi, at least 20 miles west of the project site. The supply would be highly variable in quality and seasonal in availability.

Disposal of the irrigation return water would have the same limitations as brackish water, in that disposal would not be possible in the vicinity of the project, without substantial treatment. The additional costs, chemicals and energy consumption of treatment and pumping, and use of brackish water is unattractive when compared to the CVP and non-CVP water conveyed by USBR through the Folsom South Canal.

d) Hybrid wet-dry cooling or spray-enhanced dry cooling (to reduce make-up water by at least 25 to 50%);

Response: Although alternative cooling technologies such as dry and wet/dry cooling may be technically feasible, they represent a substantial economic penalty for the CPP. The District's ability to provide clean, reliable, and highly competitive source of energy for the District ratepayers, relies on the ability of the CPP to remain cost efficient.

The "wet/dry" cooling alternative includes a cooling tower/surface condenser system operated in parallel with an air-cooled condenser. The concept is that during cooler weather, the air-cooled condenser could perform the majority of the cooling thus conserving water. During hot weather, the cooling tower could perform the majority of the cooling, thus achieving a lower steam turbine exhaust pressure and therefore a greater plant output than would have been achievable using an air-cooled condenser alone. The "wet/dry" cooling system is most appropriate for plants where there is sufficient water available during hot weather, but where there is a limited supply on an overall annual use basis (e.g. a limited groundwater resource). Since the CPP proposes to use surface water that would intuitively be available in greater quantities during cool weather seasons than it would during hot weather, this alternative was not considered further.

PREVIOUS EVALUATIONS

"Dry" and "wet/dry" cooling alternatives for power plants have been extensively evaluated prior to CPP. Previous studies concluded that the life cycle cost for "dry" cooling is at least twice that of "wet" cooling. The primary reason is the much higher capital cost for the air cooled condenser. The construction cost alone for air cooled condenser is six times greater than for cooling towers. For wet/dry cooling, previous studies have shown that the life cycle costs are less dramatic but still quite significant, i.e., at least 50 percent greater.

A capital cost comparison was recently conducted for the proposed 560 MW Rio Linda/Elverta Power Project. This comparison showed that the installed cost for dry cooling was 2.3 times the cost for wet cooling. For wet/dry cooling, the installed cost was 1.8 times greater than wet cooling.

Operating costs for "dry" and "wet/dry" cooling systems are significantly higher due to decreased efficiencies and higher parasitic loads. These operating inefficiencies are greatest in the summer when the demand for efficient plant operation (and the subsequent loss of revenue) is the greatest. Operational cost increases for dry cooling due to thermodynamic inefficiencies, increases in heat rate, and fuel costs are substantial, and could amount to more than $200 million over the life of the plant.

A life cycle cost evaluation of dry and wet/dry cooling alternatives was conducted in 1998 for a similar project, the 700 MW High Desert Power Project (HDPP). The HDPP's conclusions were that the capital cost to use dry or wet/dry cooling was 100 percent and 50 percent higher than wet cooling, respectively. The life cycle costs to use dry cooling were over 5.1 times higher than wet cooling and 3.9 times higher for wet/dry cooling.

"Dry" or "wet/dry" cooling alternatives have actually been employed at other power plants but these are generally much smaller plants than the proposed CPP. The substantial increase in natural gas consumption due to inefficiency on peak temperature days makes this a substantial financial burden to the ratepayer.

CONCLUSION

Although dry cooling is technically feasible for CPP, it is undesirable both economically and visually. Notably it also defeats the high power density design (which holds promise for reducing the number of new energy facilities needed in California) by decreasing power output most at those times when California most needs power: hot summer days. Air cooled condensers consume about twice the area of wet cooling towers and noise emissions are slightly higher than wet cooling towers. In addition, their larger, bulkier profile is a permanent visual impact that may not integrate well into the overall landscape pattern.

e) Wastewater zero-discharge; and,

Response: Implementation of a zero-discharge system would reduce water use by CPP. Zero discharge systems require a concentration unit, crystallizer and or drum drier to reduce all liquids to a solid or semi-solid state. Concentration is achieved by using heat and energy from the plant and thus introduces a parasitic load that reduces overall efficiency. The waste product from the crystallizer then needs to be collected and disposed, generally by large trucks to a landfill or other suitable facility. Additional chemicals would be used to flocculate and crystallize wastewater, resulting in additional storage, management, transport and disposal. Crystallizers are tall structures that would contribute to the visual impact of the facility. The additional

capital and operating costs affect the cost-efficiency of the plant, to which the District is responsible for its ratepayers. That is, the cost of producing energy would then be higher and the added cost would come from the people in Sacramento and surrounding areas. The long-term availability of waste disposal capacity may be affected by this additional generation of waste material.

Secondly, the implementation of zero-discharge would deprive waters downstream of CPP, including Clay Creek, Hadselville, Laguna and the Cosumnes River of the beneficial uses of water from CPP. These streams were historically ephemeral, but additional diversions from the Cosumnes River have left it dry through much of the summer. The drinking-water quality water discharged from CPP to Clay Creek would be available to support agricultural, irrigation, fish and wildlife habitat and other uses in the watershed, and contribute to sustaining flows through the Cosumnes River during summer months. From the Cosumnes water would flow into the Delta. Zero discharge would effectively consume this water without further beneficial use.

f) Recovery of water from cooling tower blowdown by use of reverse osmosis (RO), evaporator, direct osmosis, or other concentration process.

Response: Reverse osmosis requires water to be pressurized to pass through a membrane, leaving a concentrated brine as a waste product. The cost of pumping and pressurizing water considered in conjunction with the need to dispose of a concentrated brine waste makes this an expensive technology, primarily suited to locations where brine waste disposal is easy (coastal or near underground salt domes, for example). To polish water suitable for discharge, a combination of RO and Ion Exchange (IX) might be necessary. IX requires acid and other chemicals to regenerate the column, resulting in additional chemical management and disposal costs. RO is generally acceptable for small volumes, but is not competitive for larger amounts of water. Also RO has a relatively high requirement for maintenance, as membranes are sensitive to entrained silica and other materials. General costs of RO treatment are estimated to be between $1.5 and $2.5 per 1,000 gallons of water at 480 ppm TDS. This additional cost would need to be paid by the ratepayers of the District and would not meet the objectives of the District to provide clean, reliable energy at the lowest cost.

112. The analysis should include a discussion of the following:

a) Alternative water sources currently available and projected to be available over the life of the project;

b) Impacts of water use and wastewater discharge in comparison to those currently proposed for the project;

c) Economic impacts (capital and operating costs including water purchase and infrastructure price);

d) Changes in plant and linear facility infrastructure; and,

e) Changes in plant efficiency and output.

Data and results should also be summarized and presented in tabular form.

Response: Data Request 112 is essentially a listing of discussion items to be considered in the response to Data Request 111. Please see the various responses to Data Request 111 for a discussion of alternative water sources.

Due to the length and breadth of the topic covered, and the variety of layouts and operating parameters for each alternate, there is not a concise way to extract and tabulate text and data that would serve a meaningful comparison. The Applicant asks that the entire context of the responses in 111 be considered, as each alternate has unique measures that are not easily conveyed in tabular form.

113. What constituent(s) limit wet cooling tower cycles of concentration? What scale inhibitors and dispersants would be used at 3, 5, 10, 15, and 20 cycles of concentration?

Response: Based on existing water quality data, we believe cycles will be limited by total dissolved solids limitations in blowdown. The RWQCB has generally required 500 ppm discharge limit. With intake water between 40 and 50 ppm, this would allow up to 10 cycles of concentration. In practical terms, trace metals in makeup water will probably require the cycling concentration to be lower.

Scale inhibitors and other potential chemical treatments are listed in Table 8.12-2 of the AFC. It lists specifically Nalco 8306 Plus, or Sodium tolytriazole. The specific chemicals that would be used are determined based on operating conditions and cost, but should be similar.

As noted, the tower is not expected to operate above 10 cycles, and at less than 10 cycles the chemicals that would be added are the same as listed.

114. What forms of silica are anticipated in the make-up water supply? What is the projected Silt Density Index (SDI) and how will this be accommodated in the RO process? What chemicals will be added to optimize the RO process? How will RO cleaning water be managed?

Response: Silica occurs in dissolved and colloidal forms, depending on temperature and pH. Water quality tests did not attempt to segregate the forms. It is not known what the projected SDI is. It is not anticipated that either of these parameters will limit water use. The RO system has not been designed yet and chemicals that may be added have not yet been determined. As shown in Figure 2.2-6, a low volume of RO reject is cycled into the cooling tower system.

115. Twenty cubic feet per second (cfs) or 39.7 acre-feet per day (AF/d) of City water rights were assigned to SMUD in 1957 for users serviced by the Folsom South-Canal, but CPP peak demand will consume most of these water rights or 34 AF/day (7,706 gpm at 104°F, 3 cycles). Are there any SMUD users, such as Rancho Seco Plant (RSP) that would compete for the original water rights? What is the RSP water demand after CPP start-up? Would the 1,750 cfs minimum Lower American river flow shown in Table 8.14-2 be affected by the CPP water use?

Response: As noted in Section 7.1, SMUD has a contract with the USBR to deliver up to 75,000 AFY of CVP and non-CVP water, of which only a small part is required for this project and the RSP facility. CPP is projected to use approximately 8,000 AFY, and RSP currently uses approximately 14,000 AFY. Combined these values do not approach the 75,000 AFY under contract with the USBR. Water use by RSP is expected to decrease after decommissioning, and therefore would not compete significantly with CPP. The 1,750 shown in Table 8.14-2 is listed in the requirements of the County of Sacramento, and does not directly affect how the USBR distributes and allocates CVP water under its authority. The cited LORS would guide when and whether the County diverts water and would have no affect on USBR's deliveries of water to CPP.

116. Will the CPP be able to secure a contract augmentation for additional water from the USBR if needed?

Response: SMUD has received a "Will-Serve" letter from the USBR dated November 26, 2001 (copy attached as Attachment W&SR-116). In the letter, USBR confirms contract delivery of up to 60,000 acre-feet of water per year from Reclamation's Central Valley Project and approximately 15,000 AFY of non-CVP water via the Folsom-South Canal. The letter states, "Reclamation law provides for successive renewals of water supply contracts for municipal and industrial water (Act of June 21, 1963, P.L. 88-44, 77 Stat. 68)." Furthermore, the letter states, "Given that the current use from all sources at Rancho Seco is less than 17,000 AFY, sufficient water remains within SMUD's contract entitlement, as it exists and as it will be renewed, to support the

additional 8,000 AFY projected for use by the new facility, assuming all other contract terms are met." From this correspondence, it appears clear that the USBR feels there is sufficient water to meet current uses and the projected needs of CPP. While SMUD believes the possibility that an augmented or substitute supply will be needed is extremely remote, state and federal law provide for short- and long-term water transfers and assignments, alternatives that could be pursued, if necessary.

117. What is SMUD's projected water demand for all other water uses over the next 40 years on an annual and peak week basis? How will this demand be met in the event that the USBR contract is not renewed? How will this demand be met under 7Q10 conditions? Will Clay Creek, Hadselville Creek, Laguna Creek, Cosumnes River, or other dry weather stream flows be impacted by these future demands?

Response: There are four parts to the question. Responses are provided with the letters A through D, corresponding to the parts of the question.

A) Projected water demand is the same for 40 years. A rate of 1638 gpm is projected for Phase 1 and 1638 gpm is projected for Phase 2, with the same number of operators and the same operating conditions. If water quality degrades, the use could go up; however, the degradation, and therefore, any use adjustment is not predictable. (Note: This response does not address SMUD's water uses for its administrative headquarters, corporate yard or other non-generation facilities nor does it address water used to support generation at other generation sites, e.g., SMUD's Upper American River Project in El Dorado County or Campbell Soup Company, because there is no link or relevancy to the source of water proposed for the CPP.

B) SMUD has received a "Will-Serve" letter from the USBR dated November 26, 2001. In the letter, USBR confirms contract delivery of up to 60,000 acre-feet of water per year from Reclamation's Central Valley Project and approximately 15,000 AFY of non-CVP water via the Folsom-South Canal. The letter states, "Reclamation law provides for successive renewals of water supply contracts for municipal and industrial water (Act of June 21, 1963, P.L. 88-44, 77 Stat. 68)." Furthermore, the letter states, "Given that the current use from all sources at Rancho Seco is less than 17,000 AFY, sufficient water remains within SMUD's contract entitlement, as it exists and as it will be renewed, to support the additional 8,000 AFY projected for use by the new facility, assuming all other contract terms are met." This correspondence clearly indicates two things: i) that the USBR will renew the contract as required by Federal Law; and the USBR contract provides sufficient water to meet current uses and the projected needs of CPP. As previously stated, the current contract will be in force through

2012; SMUD is not aware of any set of circumstances that would prevent renewal before expiration of the contract, and an early renewal process for all CVP contractors, including SMUD, is presently in progress.

C) SMUD understands "7Q10" to mean seven-day low-flow with 10-year recurrence. USBR recently published its draft shortage policy in the Federal Register. Under the shortage policy, deliveries of municipal and industrial (M&I) water (SMUD's use is a M&I use) are not reduced until irrigation deliveries are reduced to 75%; then M&I deliveries and Irrigation deliveries are reduced by equal percentages until M&I deliveries are at 75% of historic use adjusted for growth and irrigation deliveries are at 50%. Irrigation deliveries are then reduced to 25% while M&I deliveries remain at 75%. M&I deliveries are never reduced below public health and safety requirements. It is inconceivable that, under this policy, deliveries of CVP water to Rancho Seco will ever be significantly curtailed: (1) CVP-wide irrigation deliveries have never been reduced to 25%; thus, based on history, deliveries to SMUD would never be reduced below 75% of historic use adjusted for growth; and (2) in any event, use of water for electric generation probably comes within the policy's provision that deliveries for public health and safety requirements will always be met. Moreover, it is important to recognize that Reclamation has never failed to supply water to its M&I water contractors. Therefore, the possibility of SMUD receiving no CVP water is extremely remote. Assuming *arguendo* that CVP water became unavailable, delivery of SMUD's *non-CVP* water to the site under the Reclamation contract is *not* dependent on CVP water availability nor is it subject to application of Reclamation shortage provisions. Thus, SMUD could rely on its non-CVP supply to meet plant needs if no CVP water were available. SMUD could also explore short-term water transfers from other water rights holders. In the very unlikely event that SMUD's water demand could not be met by any of these resources, it may be necessary to shut the plant down temporarily.

D) Clay Creek was an ephemeral stream prior to construction of the Rancho Seco Plant (RSP). Discharge from RSP under NPDES permit has resulted in year around flows in Clay Creek, which in turn supplies Hadselville Creek, Laguna Creek and the Cosumnes River. Future flows due to RSP discharge are speculative upon NRC requirements and other governing bodies as decommissioning continues at RSP. CPP proposes to discharge to Clay Creek under NPDES permit. This discharge will supplement the current flow volume of the affected waterways during CPP plant operation and cease during periods of non-operation. Since USBR has produced a will-serve letter indicating sufficient water for CPP and RSP

via the Folsom-South Canal, no impact to the waterways is expected other than described here.

BACKGROUND

Construction of the CPP may induce water and wind erosion at the power plant site. Surface water runoff is to be directed around the construction site to minimize erosion and pollutant loading. A Storm Water Pollution Prevention Plan (SWPPP) will be required for construction. The AFC (Pages 8.14.15 and 8.14.16) states that approximately 50 acres of land will be graded, plus approximately 20 acres of land used as a laydown area. The laydown area is described as including ephemeral streams that would have to be crossed in some manner. It is stated that a SWPPP will be provided to the County and will describe mitigation measures to avoid or minimize erosion and sedimentation to a level less than significant. Typical Best Management Practices (BMPs) are described in the AFC, particularly in Section 8.9.5, but few are specific to the CPP site.

DATA REQUEST

118. Please provide a draft Storm Water Pollution Prevention Plan (SWPPP) consistent with the requirements for a General Storm Water Construction Activity Permit that identifies measures that will be implemented to control wind and water erosion related to CPP construction for all ancillary and or linear facilities. The plan shall describe all temporary and permanent construction BMPs, calculations and assumptions used in determining drainage or containment structure sizes, capacity and appropriate BMPs, and show conceptual design and locations proposed for these BMPs. Also, include in this draft plan a potential contaminate spills prevention and countermeasure plan.

    Response: This question will be responded to on February 4, 2002.

119. Please provide a draft erosion control plan for plant operation to include practices and conceptual designs with appropriate back-up calculations for avoiding or minimizing CPP-induced or exacerbated wind and water erosion on bare areas of the CPP site, in the diverted stream channels, and at locations of flow concentration for plant drainage.

    Response: This question will be responded to on February 4, 2002.

120. Please provide written evidence of consultation with Sacramento County regarding conformance with County regulations and policies for the proposed grading plan and storm water facilities. If consultation has not occurred, please provide a schedule of when County comments on the grading plan and storm water facilities will be provided to the Energy Commission.

    Response: Sacramento County Public Works Agency has not specifically been consulted at this time regarding the proposed grading plan and storm water facilities. However, the Sacramento County Planning and Community

Development Department has reviewed the AFC for conformance to general County Ordinances. As summarized in AFC Table 8.14-9, grading plan and storm water permit applications will be filed with the County 90 days prior to construction. In addition, a Construction Activity NPDES Stormwater and General Industrial Stormwater Permit application will be filed with the Regional Water Quality Control Board 90 days prior to construction. The information necessary to submit a grading and stormwater permit application will be developed during the detail-engineering phase. This information is expected to be available in August 2002.

BACKGROUND

Section 8.14.5.1 of the AFC states that stormwater that falls within the developed CPP site during construction and operation may potentially dissolve oils, grease, and other contaminants and carry them along with entrained sediments into Clay Creek. A Notice of Intent (NOI) is required to demonstrate compliance with the General Permit for Discharges of Storm Water Associated With Industrial Activities. The NOI will include a SWPPP that describes BMPs that will be used to reduce industrial stormwater contamination. Section 8.14.5.1 of the AFC describes the detention basin as a BMP, but there is no single description of all BMPs that would be included in the NOI. Since there is a potential for stormwater contamination, staff needs a description of: potential sources of contamination; receiving waters; management practices intended to prevent or minimize contamination; and probable effect of BMPs on reducing contamination that are outside the NPDES process.

DATA REQUEST

121. Please provide a preliminary SWPPP consistent with the requirements of the General Permit for Discharges of Storm Water Associated With Industrial Activities that includes:
    a) a site map,
    b) a list of significant materials handled and stored at the site,
    c) a description and assessment of potential pollutant sources,
    d) a description of proposed storm water BMPs intended for use at the site, and
    e) a description of proposed BMP goals and monitoring protocol for achieving intended goals.

    Response: This question will be responded to on February 4, 2002.

122. Stormwater mitigative measures shall be addressed in the SWPPP and should include;
    a) storm drain inlet protection to prevent sedimentation-laden runoff from disturbed soil,
    b) silt fence or straw bail barriers at less than 250 foot spacing,

c) secondary containment for hazardous materials,
d) designated storage areas for construction wastes,
e) a spill prevention and control plan,
f) storage of all liquid wastes in covered containers,
g) emergency spill containment kits,
h) routine maintenance of oil/water separator system,
i) use of geotextiles and mats to stabilize slopes,
j) soils stabilizers to minimize dust, and
k) temporary and permanent vegetation strategies.

Additional measures may be needed to meet special Inland Surface Waters Plan requirements.

Response: This question will be responded to on February 4, 2002.

BACKGROUND

AFC Section 8.14.3.1 states that perennial flow in Clay Creek originates west of the CPP site where wastewater from the Rancho Seco Plant discharges into Clay Creek at the rate of approximately 20 cfs (13 mgd). This discharge contains irrigation runoff, processed radioactive water, treated wastewater, and heating tower blowdown. Dilution water is added from the Folsom-South Canal, but the total Clay Creek discharge is not given. Clay Creek flows into Hadselville Creek, which flows into Laguna Creek, which flows into the Cosumnes River. The Cosumnes River is described as flowing 2,000 cfs most of the year, but flows in the other creeks are not given.

The proposed CPP will introduce another 3.6 cfs of cooling tower blowdown and stormwater (on average) into Clay Creek, increasing Clay Creek discharge by approximately 20% (not including dilution water). The effect of this additional discharge on Laguna and Hadselville Creeks is not known nor is the resulting effect on overall water quality known for those creeks.

DATA REQUEST

123. Please provide an estimate of the relative contribution of the CPP discharge on Clay Creek, Hadselville Creek, Laguna Creek and the Cosumnes River by season and describe the resulting effect on water quality for those streams.

Response: SMUD did not find any monitoring data on Hadselville or Laguna Creeks. The following Table W&SR-123 shows the minimum affect of CPP on calculated flows in Clay Creek during 1999. With stormwater runoff, flows in November to March are probably slightly higher.

TABLE W&SR-123
RSP Discharges, plus 3.6 cfs from CPP at Clay Creek

Month	Average	Maximum	Minimum
Jan	15.99	16.42	15.42
Feb	17.56	18.02	17.27
Mar	16.67	17.84	15.71
Apr	16.47	18.6	15.23
May	16.57	17.54	14.61
June	13.01	16.25	9.54
Jul	15.12	16.44	13.11
Aug	14.36	16.99	11.66
Sep	15.35	18.33	13.89
Oct	14.28	18.16	13.32
Nov	14.54	16.98	12.97
Dec	15.66	16.36	14.92

124. Please provide records of Folsom-South Canal, Rancho Seco Plant and Clay Creek discharges over the past year to verify background discharges and water use.

Response: The following Table S&WR-124 lists the discharges from RSP to Clay Creek. SMUD found no flow monitoring data on either Folsom South Canal or Clay Creek.

TABLE W&SR-124
CPP: Discharges from Rancho Seco Plant to Clay Creek (cfs)

Month	Average	Maximum	Minimum
Jan	12.39	12.82	11.82
Feb	13.96	14.42	13.67
Mar	13.07	14.24	12.11
Apr	12.87	15	11.63
May	12.97	13.94	11.01
June	9.41	12.65	5.94
Jul	11.52	12.84	9.51
Aug	10.76	13.39	8.06
Sep	11.75	14.73	10.29
Oct	10.68	14.56	9.72
Nov	10.94	13.38	9.37
Dec	12.06	12.76	11.32

BACKGROUND

Portions of Clay Creek, Hadselville Creek, Laguna Creek and the Cosumnes River may be effluent-dependent water bodies managed under RWQCB's Inland Surface Waters Plan. Section 8.14.3.1 states that the proposed CPP surface discharge has the potential to impact in-stream and water supply beneficial uses including industrial, agricultural, and municipal water supply; groundwater recharge; freshwater replenishment; aesthetic enjoyment; recreation; preservation and enhancement of fish, wildlife, and other aquatic resources including threatened and endangered species (Chinook Salmon and Delta Smelt). The NPDES permitting process can be lengthy and specific water quality objectives have not yet been established. Additionally, the RWQCB has indicated that effluent discharge criteria could be "very stringent" after incorporating allowances for long-term and indirect impacts such as bioaccumulation and carcinogenicity on threatened and endangered species and potential drinking water uses.

With yet-to-be-defined "very stringent" discharge criteria, it is prudent to consider available alternatives. A conservative assessment of alternatives is needed to find the most effective method to meet the expected "very stringent" discharge requirements.

DATA REQUESTS

125. What process will be used to add/delete beneficial downstream uses, per the Inland Surface Waters Plan and other applicable requirements?

Response: The RWQCB retains the authority to modify the Basin Plan, which determines beneficial uses. It is not SMUD's intent at this time to request for any changes in beneficial use designations.

126. Will background water quality influence water quality objectives or will they be considered effluent dependent? What is the monthly influence of Rancho Seco Plant (RSP) effluent, natural runoff, Folsom-South Canal, and other reservoir releases on the background water quality parameters of surface streams? If unknown, how will baseline background water quality parameters be established? Will these change after RSP decommissioning, CPP start-up, and other relevant basin development?

Response: The RWQCB retains the authority to determine water quality objectives, based on scientific data and the Basin Plan. Generally the background water quality is not a consideration except with respect to temperature and pH.

Since Clay Creek is an effluent dominated water body, RSP runoff and effluent determines the water quality approximately 6 months a year. Background water quality parameters are established in the NPDES permit by requiring sampling at an upstream location (R1) when flow is present. Background parameters will likely be unaffected by changes at RSP.

127. Will habitat maintenance (maximum/minimum flows) be addressed? Will water quality objectives and effluent discharge standards vary seasonally? How will stormwater standards be established?

Response: The RWQCB retains the authority to determine water quality objectives, based on scientific data and the Basin Plan. The Basin Plan includes designations for warm and cold water fish habitat that will probably apply to the receiving waters of Hadselville and Laguna creeks.

The RWQCB does adjust objectives and standards seasonally as appropriate. Stormwater standards are established by the SWRCB and implemented by the RWQCB according to regulations in 40 CFR122.26. The Applicant does not have a role in determining the standards.

128. Please provide the most recent Inland Surface Waters Plan water quality objects (including projected arsenic levels) and a copy of relevant Effluent-Dependent Waters (EDW) Task Force recommendations if one or more of the following methods will be used to define specific water quality objectives; Total Maximum Daily Load (TMDL) analysis, EDW-Specific Water Quality Objectives, EDW-Specific Uses, or UAA (Use Attainability Analysis).

Response: The Applicant is not in the position to define water quality objectives, TMDL EDW or UAAs, as the authority rests with RWQCB. The RWQCB may use any or all of these sources. The Inland Surface Waters Plan and current EDW policy are available for download at: http://www.swrcb.ca.gov/rwqcb5/available_documents/index.html.

129. Some indicator parameters monitored at other ephemeral and effluent-dependent ecosystems have included; pH, direct osmosis, turbidity, total suspended solids, oil & grease, ammonia, arsenic, cadmium, copper, lead, diazanon, zinc, molybdenum, phthalates, silver, pesticides, ammonia, phosphate, selenium, boron, TDS, discoloration, fungi/slime/other objectionable growth, taste & odor, and coliform. Please define which constituents are expected be monitored, the averaging period, the implementation procedures, and monitoring and reporting requirements.

Response: The RWQCB retains the authority to determine water quality objectives, based on scientific data and the Basin Plan. Table 8.14-3 contains the constituents that CPP expects could be monitored. The RWQCB uses averaging periods ranging from daily to monthly or annual. These implementation measures, as well as monitoring and reporting are described in detail in the NPDES permit issued by the RWQCB. CPP does not feel it can speculate on what the RWQCB staff will determine.

130. Please explain how California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Services (USFWS) requirements will influence the permitting process particularly regarding bioaccumulation and carcinogenicity as well as degradation of aquatic communities. Will whole effluent toxicity (WET) testing be required on a real-time or periodic basis?

Response: Guidelines for water quality criteria used by the RWQCB include EPA Chronic and Acute Aquatic life criteria which are developed based on the most sensitive aquatic organisms, and the most sensitive toxic endpoint (reproduction, survival, etc.) The RWQCB staff also reviews criteria for carcinogenicity, as implemented by the drinking water standards.

The RWQCB generally requires 3-species chronic toxicity testing for a period of at least a year as part of the NPDES permit.

131. What short-term contingencies such as storage, diversion, or control options are available if the discharge is not in compliance with the NPDES permit?

Response: Given the volume of water, there are no contingencies for storage or diversion. NPDES permit limits generally stipulate both a maximum and average concentration, such that the plant will often need to operate below maximum, providing a substantial threshold of safety before acute environmental harm would occur. Penalties for non-compliance are monetary and potentially criminal, and function adequately to deter operation beyond authorized limits. In the event compliance was not possible, the plant would potentially need to cease operation.

132. What is the schedule for issuance of the draft and final NPDES permit?

Response: CPP anticipates submitting and application for NPDES permit in mid-January, after which the RWQCB will take approximately 90 days to

review and issue a draft permit, and normally another 60 days for a final permit. This presumes that the Final Assessment, which is the RWQCB's CEQA document will have been completed. Under the circumstances the Final NPDES permit is not anticipated until 30 days after adoption of the CEC Final Assessment.

BACKGROUND

Section 8.14.5.1 of the AFC describes a detention basin intended to maintain post-development discharges from the CPP at pre-development levels. According to the Data Adequacy Supplement dated November 13, 2001, the detention basin would be designed for a volume equal to the difference between the pre-development and post-development 10-year, 24-hour flood volumes, or 100,000 cubic yards of water. It is presumed that this is an error, and that the actual design volume is 100,000 cubic feet, which would be consistent with the difference in ten-year flow volume between AFC tables 8.14-6 and 8.14-7. According to the AFC Supplement, the detention basin design, which would include an oil/sediment separator, would be consistent with Bay Area Stormwater Management Agencies Association (BASMAA) recommended BMPs for extended detention ponds.

The volume required for an on-line detention basin such as this one is not necessarily the same as the difference in total flood volume. The AFC Supplement states the detention basin would drain in 24 hours but does not give the design discharge from the detention basin nor is the pre-development peak discharge rate given. The detention basin would include a spillway in case of overflow, but the location and design of this spillway is not given. Based on Figure 8.14-4R, it appears the detention basin would be contained by an earthen embankment. Overflow of the earthen embankment, unless protection is provided in an armored spillway, could result in sudden failure of the embankment and release of all detained waters at once.

DATA REQUEST

133. Please provide the hydrologic back-up calculations, including mapped watershed areas, peak discharge rates and hydrographs that led to the flood volumes given in Tables 8.14-6 and 8.14-7. Show pre-development and post-development peak discharge rates, hydrographs and flood volumes assuming no detention basin. Include cooling tower and landscape areas in these calculations even though the post-development discharges and volumes may be the same as pre-development volumes.

Response: Calculation sheets are provided as Attachment W&SR-133.

134. Please provide a hydrologic reservoir routing analysis for the proposed detention basin showing how the basin will achieve the desired reduction in peak discharge rate. What will be the proposed design discharge and time to drain of the detention basin?

Response: This question will be responded to on January 18, 2002.

135. Please provide more discussion of the rationale for using the 10-year, 24-hour design for the detention basin. Include a discussion of any other applicable detention design requirements (i.e., Sacramento County) that may be more stringent than BASMAA.

Response: The 10-year, 24-hour design basis has been accepted as the appropriate design standard in previous AFCs for power plants of similar size.

136. Please provide a conceptual design of the detention basin embankment and spillway including overflow analysis using the proposed hydraulic characteristics of the spillway and the hydrologic and reservoir routing techniques described in Data Requests #133 and #134 above for at least the 25-year, 50-year and 100-year flood hydrographs (include discharges greater than the 100-year if the spillway design discharge is greater). Describe what will be the spillway design discharge, include a rationale for selecting that discharge and include an assessment of the risk and potential consequences of spillway or embankment failure resulting from discharges exceeding the spillway design discharge. Include a conceptual spillway armoring design and a scour analysis to demonstrate the adequacy of the proposed armoring to protect against undermining through plunging flows on the downstream side of the spillway.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being premature. The level of detail requested will be developed during the detailed design phase of the project. Final design will address the issues raised to ensure the overflow discharge does not contribute creek erosion.

137. In light of possible "very stringent" NPDES effluent discharge criteria, please describe the anticipated stormwater discharge criteria or discuss whether stormwater will be managed under the same criteria as cooling tower blowdown and other waste streams. How will detention pond and oil/water separator effluent be monitored prior to discharge? What contingency is planned to assure that site stormwater will be able to meet the "very stringent" discharge criteria?

Response: The stormwater discharge criteria are set by the State Water Resources Control Board (SWRCB). As a general guide, they look for turbidity, sediment and other visual signs that one or more Best Management Practices (BMPs) have failed, and require that any materials that might cause water quality degradation not be allowed to contact stormwater through containment or cover. A recent amendment to the Stormwater Regulations requires that:

> . . . should visual monitoring indicate that there has been a breach, malfunction, leakage, or spill from a BMP which could result in the discharge in storm water of pollutants that would not be visually detectable, or if storm water comes into contact with soil amendments or other exposed materials or contamination and is allowed to be discharged,. . . permittees [are required] to implement specific sampling and analytical procedures to determine whether Best Management Practices (BMPs) implemented on a construction site are: (1) preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment or silt, and (2) preventing other pollutants, that are known or should be known by permittees to occur on construction sites and that are not visually detectable in storm water discharges, from causing or contributing to exceedances of water quality objectives.
>
> Discharges that flow through tributaries that are not listed in Attachment 3 [impaired water bodies] . . . are not subject to these sampling and analysis requirements.
>
> Examples of construction sites that may require sampling and analysis include: sites that are known to have contaminants spilled or spread on the ground; sites where construction practices include the application of soil amendments, such as gypsum, which can increase the pH of the runoff; or sites having uncovered stockpiles of material exposed to storm water. Visual observations before, during, and after storm events may trigger the requirement to collect samples.(Construction Activities General Storm Water Permit, SWRCB Order No. 99-08-DWQ)

Stormwater discharges and industrial discharges are monitored by different sections of the RWQCB, applying standards which they consider appropriate. Generally the industrial discharge standards, are numerically more stringent.

SWRCB standards require visual monitoring of stormwater, and this would be appropriate to the detention pond. Oil/water separator effluent is generally observed visually on a periodic basis.

In the event stormwater fails to meet the required criteria, the RWQCB has the power to levee fines and issue enforcement actions against the discharger. It is the intent of SMUD to avoid any enforcement actions.

138. Please show all proposed and existing contours on grading plans. Show all pipeline, drainage features and laydown areas. Please provide a figure that distinguishes areas that will be routed to: the blow-down treatment systems, the stormwater detention pond, and other remaining areas.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being premature. The existing contours and final grading plan are shown on Figure 8.14-4. This figure also shows the location and routing of the stormwater collection system as well as drainage features. Exact location of laydown areas and other details will be developed during the detailed engineering design phase in the 3rd quarter of 2002.

139. How will floating oil and debris be removed from stormwater runoff on a routine basis? How will settled solids be removed from the stormwater detention basin without increasing the risk of an effluent violation?

Response: Storm water from outside equipment containment areas would be collected in a catch basin leading to an underground multi-chambered oil/sediment separator vault which allows the settling of sediments and the trapping of oil and grease prior to the discharge of stormwater into the detention basin. These collection chambers allow for regular inspection of the trapped sediment and oil/grease. Collected sediment and oil would be removed periodically from the chambers and properly disposed of by the means appropriate for sediment and oil/grease wastes. This is considered to be a Best Management Practice solution for the application. Debris would be removed using trash racks on the upstream side of the treatment system.

By design, the detention basin is dry between storm events and therefore any sediment which did accumulate in the basin could be removed during the dry periods thus eliminating the risk of an effluent violation. Disposition (disposal to sanitary landfill or other site as required) of the collected sediments would be a function of the sediment composition. Periodic sampling of the basin soil would be a normal maintenance operation.

140. To reduce the impact of a stormwater discharge on downstream users, could a portion of the stormwater detention pond effluent be used as cooling tower makeup?

Response: From a design and engineering standpoint, the quantity and quality of stormwater runoff would be highly unreliable. The CPP treatment system would be designed to treat constituents as they are known to occur in FSC. Stormwater can occur suddenly and can have elevated amounts of turbidity, dissolved salts or other constituents that are not technically harmful, but for which special measures might need to be used in adapting the treatment system. For purposes of the power plant this would cause a substantial drop in reliability and increase in risk. The quantity being relatively small, the benefits of diverting this water would be offset by the

additional costs and effort in design, treatment and monitoring that might be necessary. CPP is not planning to use stormwater in the cooling tower.

BACKGROUND

The AFC commits to using secondary containment and curbing for all chemical storage areas.

DATA REQUEST

141. How will spill containment will be provided for each chemical truck unloading station that will collect spills from the largest delivery truck plus the 25-year, 24-hour storm event?

Response: For the bulk chemicals the truck unloading area will be curbed and the area sloped to a drain. This drain will go to the secondary containment basin for the storage tank and will accommodate over 150 percent of the truck volume, plus the volume associated with the 25-year, 24-hour storm event. For tote chemicals, the unloading area will be curbed and drain to a catch basin sized to accommodate 150 percent of the largest tote volume plus the rain from the 25-year, 24-hour storm event. In the event of a spill, a qualified disposal company will pump the basin out. Rainwater accumulation will be periodically pumped out and delivered to the equipment drain system.

142. Please describe how sufficient spill storage volume will be provided to contain spills for the largest supply truck and storage tank at respective locations.

Response: Sufficient spill volume for the largest bulk delivery truck and storage will be accomplished by use of a secondary containment for the storage tank sized to contain 150 percent of the storage tank volume, plus the rainfall from a 25-year, 24-hour storm.

BACKGROUND

The AFC demonstrates through FEMA Federal Insurance Rate Maps that the CPP is not within the 100-year floodplain of Hadselville Creek (AFC Section 8.14.3.3). However, the absence of a FEMA-mapped floodplain does not necessarily mean a site is not subject to flooding. The CPP is adjacent to Clay Creek, which apparently has not been mapped by FEMA, and therefore has a 100-year floodplain of unknown extent. Several tributaries to Clay Creek cross the CPP site and the extent of flooding is also unknown. The AFC states and Figure 8.14-4R shows that several of these drainageways will be diverted around the CPP site but discharges and floodplains are not shown. Figure 8.14-4R shows a corner of the proposed detention basin very close to the creek bank where it could be subject to erosion from creek overbank flows.

DATA REQUEST

143. Please provide a hydrologic analysis to determine the estimated100-year peak discharge rates for Clay Creek and its tributaries adjacent to and upstream of the site.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being irrelevant.

144. Please provide a hydraulic analysis using the USACE HEC-RAS (or other appropriate methodology) to map the 100-year floodplain for Clay Creek and its tributaries at, adjacent to, and upstream of the site.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being irrelevant.

145. Show existing and 100-year floodplains on Figure 8.14-4R, and provide conceptual design hydraulic calculations and typical sections for diversion channels.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being irrelevant.

146. At locations where the 100-year floodplain would encroach on proposed site features, please demonstrate whether erosion or other protection is needed and provide conceptual plans and analysis as appropriate.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being irrelevant.

BACKGROUND

Section 8.14.5.1 of the AFC describes impacts to three tributaries to Clay Creek and states that these drainageways are probably jurisdictional under Section 404 of the Clean Water Act. The AFC states that a 404 Permit will be required (as well as 401 Water Quality Certification) and that an environmental assessment will be performed and mitigation measures developed as a condition of obtaining these permits. The AFC describes how the proposed gas pipeline will cross a number of streams which are probably jurisdictional.

DATA REQUEST

147. Please provide a mapping of all proposed impacts to riparian areas along with a description of the types and quantities of riparian resources to be affected such as increased sediment load in streams or reduced bank stability from trenching and the proposed specific mitigation measures.

Response: In designing the pipeline, SMUD intends to avoid all riparian areas to the extent practical. The most substantial riparian sites are along the Cosumnes River. Avoidance in this area would consist of using HDD to drill under the riparian are and therefore disturb no riparian vegetation. Figures

showing the extent of riparian vegetation and location of drilling pads are being prepared as part of the Streambed Alteration Agreement for CDFG and should be completed by March 15, 2002. With respect to sediment load in streams, or reduced bank stability from trenching, there would be no sediment load from HDD in the riparian areas, as all construction is staged at 200 feet or more from riparian areas. Where trenching is appropriate (generally small irrigation ditches), the surface would be compacted or otherwise restored to its pre-construction condition to reduce the potential for sedimentation or bank erosion.

148. Please provide evidence of consultation with the USCOE, RWQCB, and CDFG regarding the proposed riparian disturbance. Evidence of consultation should include applications for a 404 Permit, 401 Water Quality Certification, and a California Fish and Game Code 1601 Streambed Alteration Agreement.

Response: SMUD has provided initial consultation letters and held telephone communications with each of these agencies. SMUD has requested that a "pre-consultation" meeting be held with these agencies and anticipates this will occur in mid-February, followed by submission of the 404, 401 and 1601 applications thereafter.

BACKGROUND

According to the AFC (page 8.14-17) the proposed gas pipeline will cross 27 rivers, creeks, irrigation canals, riparian areas, vernal pools, and other drainages that are potentially jurisdictianal wetlands including the Cosumnes River which, according to the AFC, can reach up to 35,000 cfs during storm events. During floods, river bed and bank scour could reach the depth of the pipeline and cause a rupture. One way to minimize the risk of this type of rupture is to bury the pipeline below the expected bed scour depth for a distance beyond the stream banks sufficient to avoid expected lateral erosion. The burial depth would affect trench width, which would affect riparian impacts.

DATA REQUEST

149. Please provide mitigation measures for avoiding damage to the pipeline from 100-year bed and bank scour at river crossings. Please provide the pipeline depth and an estimate of the 100-year scour depth and extent of bank erosion with supporting calculations for all streams to be crossed. The analysis should include a description of expected trench width and length of crossing below scour depth to be used in the assessment of riparian and vegetative impacts.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as having no legal basis and is overly burdensome.

BACKGROUND

No mass & heat balances were provided in the AFC, thus it is uncertain whether the applicant proposes to use supplemental duct firing, which increases water consumption.

DATA REQUESTS

150. Please provide heat and material balances for average and 99% conditions according to the American Society of Heating Refrigeration, and Air Conditioning Engineers (ASHRAE) standards. Please describe the peak make-up water rate with and without supplemental firing with emphasis on annual water use, maximum month, and instantaneous peak day.

Response: The ASHRAE 1% summer high for Sacramento AP is 100 °F DB (dry bulb) and 72 °F WB (wet bulb). A heat balance at that condition is presented as Figure W&SR-150. .The average water balance is shown in Figures 2.2-6a and b of the AFC. The monthly water requirements are shown in Table 7.1-1 (AFC page 7-2). AFC Figures 8.14-3c and d show the water balance at a peak condition of 104 °F. No supplemental firing is being considered for the project.

BACKGROUND

Page 27 of the CPP Data Adequacy Response states that SMUD has a contract for 75,000 AFY of USBR water from the Folsom South Canal. During operation, the Rancho Seco Plant used approximately 28,000 AFY. Since closure, the plant has used approximately 15,000 AFY; and as with all USBR customers, water that is not used by SMUD is made available for other Central Valley Project (CVP) uses. Currently, the CVP dedicates 800,000 AFY year to fish and wildlife and 410,000 AF to State and wildlife refuges and wetlands pursuant to the Central Valley Project Improvement Act (CVPIA).

Per CVP policy, SMUD's unused RSP water has been made available for other CVP uses. With the proposed CPP using approximately 8,000 AFY with peak annual demands as high as 9,000 AFY, it is possible that this renewed use of American River water will decrease water currently used to meet Delta water quality standards or other fish and wildlife uses.

APPLICANT'S CLARIFICATION TO BACKGROUND STATEMENT

This Background section of the Data Requests incorrectly characterizes the effect of SMUD's use of water for the CPP on the CVP. It is true that "water that is not used by SMUD is made available for other Central Valley Project (CVP) uses." However, as a practical matter, water not used by SMUD is made available only for irrigation uses. While USBR has obligations to make water available for fish and wildlife and refuge and wetland uses, these obligations are co-extensive with USBR's obligation to make water available to SMUD. As such, the amount of water made available for these uses is determined by the hydrology of the water year, and not by SMUD's usage of water under its contract. In other words, these uses receive water whether or not SMUD takes its water. The only effect (from SMUD taking its water) is on irrigation uses, and as noted below in the response to the data requests, the effect is so small as to be literally immeasurable.

DATA REQUESTS

151. In tabular form, please provide historical annual consumption by month and yearly total of USBR/CVP water used for RSP operation from date of commercial operation until the year 2000.

Response: As stated in our letter filed December 20, 2001, SMUD objects to this Data Request as being burdensome. Yearly water use, based on billing and payments between USBR and SMUD are available for 1973 to 1997 are presented here in graphical format in the attached Figure W&SR-151.

152. Please provide an assessment of potential downstream or outflow impacts of diverting an additional 8,000 to 9,000 AFY of water from the American River.

Response: USBR manages its upstream storage in both the American and Sacramento watersheds to meet multiple agreements for minimum flows and water deliveries. As a result of these and other factors (including hydrology) that affect flows in the American River, an assessment of the diversion of an additional 9,000 AF cannot realistically be provided. As noted elsewhere, 9,000 AFY represents much less than one percent of the flows in the American River, and this amount is generally too small to measure, let alone evaluate independently. In addition, as noted above, the only impacts that may occur as a result of this diversion is an unmeasurable effect on irrigation. Minimum stream flows and water for refuges and wetlands are the responsibility of the USBR and are met irrespective of SMUD's diversion of water. Last, it is worth noting that the vast majority of diversions by SMUD are considered non-consumptive, and are discharged back into water systems which eventually flow to the Delta. Thus, to the extent that any of these flows might have been used for irrigation south of the Delta, or for environmental purposes in the Delta, SMUD's method of discharge continues to make them available.

BACKGROUND

Table 2.2-1 shows the average and peak water demand as 8,000 and 12,431 AF/Y, respectively. Chapter 1 defines the maximum rate as 9,000 AF/Y, and Table 7.1-1 shows the 4 peak months to have a demand equivalent to 9,600 AF/Y.

Section 2.2.6 indicates that the maximum natural gas requirement is 170,000 MMBtuh (LHV basis) for each gas turbine, which is 100x the heat input of comparable combined cycle turbines. No other mass & heat balance information was provided to show the sink for this large heat input or to provide a basis to better understand water consumption during average and peak conditions.

DATA REQUESTS

153. Please explain the basis for the various water consumption rates and the hours/yr that each will apply. To what degree will onsite water storage volume be used to buffer peak water demands?

Response: The maximum natural gas requirement value in AFC Section 2.2.6 is incorrect and should be 1,700 MMBtuh. AFC Table 7.1-1 provides estimates of monthly water use associated with monthly weather conditions. Peak water use could occur in any of the summer months, but would never occur at the same rate in all months. Therefore, the peak summer monthly values in Table 7.1-1 are not representative of winter months. Peak conditions are provided to calculate an instantaneous flow rate for the purpose of equipment sizing. The instantaneous flowrate provided in Table 2.2-1 is not sustained, and occurs only on the hottest days for a few hours. The number of hours of operation, and water use will depend on temporal power demands and to a lesser extent water quality that cannot be predicted with precision. ISO conditions of 61 degrees result in an annual average use of 8,000 AFY. Since this is an average condition, the Applicant developed peak annual water use estimates using conservative operational scenarios that total, on an annual basis, 9,000 AFY. Over the life of the plant, the District would expect an average use of 8,000 AFY. Onsite water storage is used for fire protection and to maintain a 16-hour supply (based on average conditions) in the event that flow is temporarily interrupted. Onsite water supply could also be used to buffer peak demands.

154. How will condenser design, cleanliness, and performance factors be monitored? How will waste solids and cooling loop solids be managed to control scale and biosolids? In order to use more than 3 cycles of water, alternatives should be considered, such as “non-clog” fill, side-stream filtration, basin mixers, and other methods should be addressed.

Response: Condenser performance will be measured by monitoring condenser vacuum, LP turbine back pressure and temperature rise across the condenser. AFC Section 2.2.7.4.1 describes the methods used to reduce scale formation, corrosion and biosolids. In addition the cooling tower basin is periodically drained and solids are removed from the basin and disposed by a qualified and licensed waste hauler.

The project, as proposed, can cycle cooling water up to 10 times as shown in AFC Table 7.1-3. Actual water cycling will be determined by our NPDES permit conditions.

During the detail design phase of the project, the plant’s NPDES discharge requirements will be used to establish the cycling requirements and options for the design of the cooling tower and associated systems. After issuance of the NPDES permit, the cooling tower cycle limiting parameter can be established. Design particulars regarding non-clog fill, side-stream filtering, and/or basin mixers will be reviewed to determine the best system to meet NPDES requirements and provide for efficient plant operation.

155. What is the anticipated condenser cleaning frequency, method, volume, and wash water constituents? How will this wash water be treated or disposed?

Response: The condenser will be cleaned on an as needed basis. Cleaning intervals can range from weekly to annually depending on water quality. Tube cleaning methods include both plastic and metal scrapers and brushes. Scrapers and brushes are forced through the tubes with a combination of plant service water and compressed air. The tubesheet is cleaned using either pressurized plant service water or by hand with a pick or rake. The cleaning water is returned to the cooling tower basin.

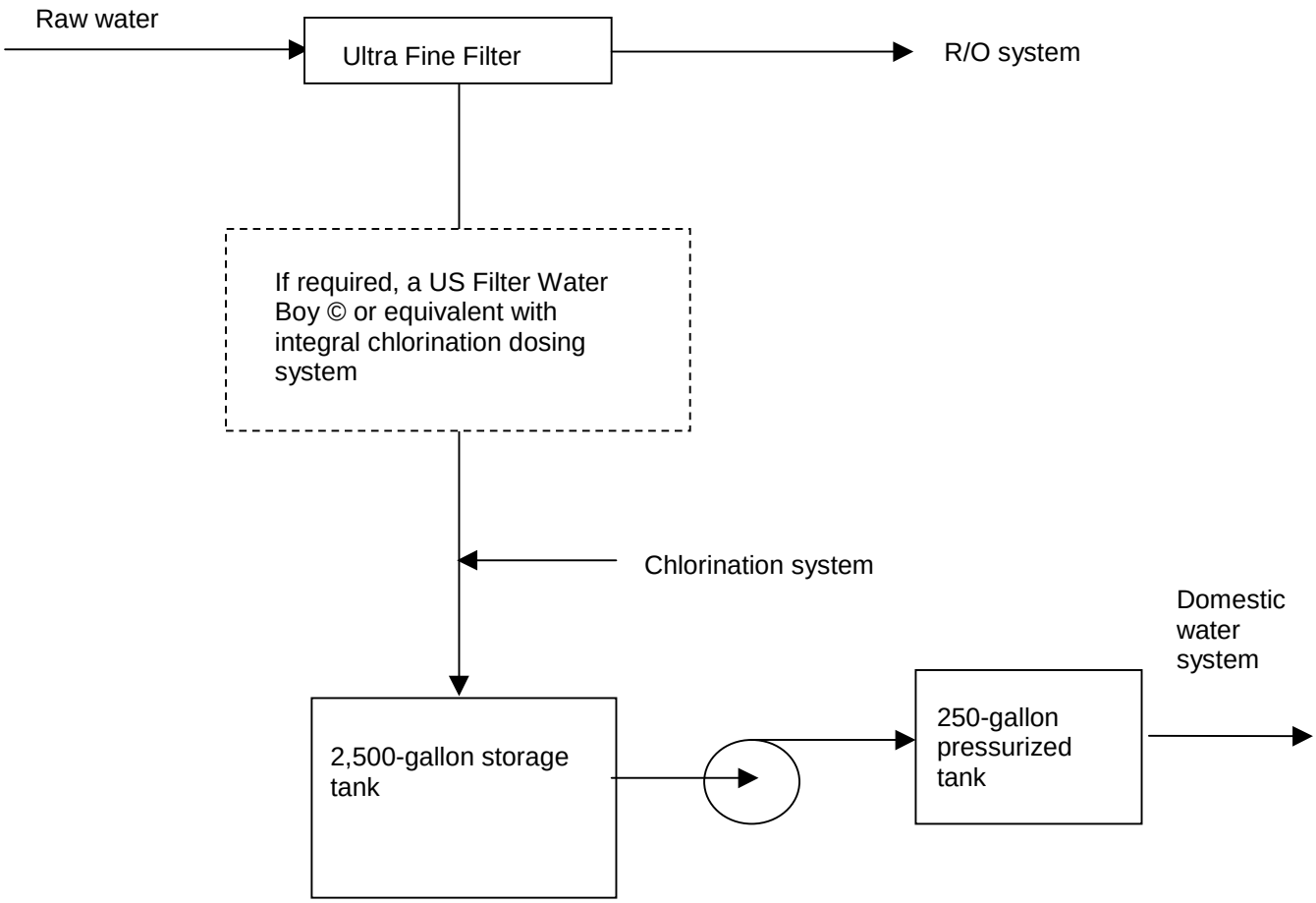
BACKGROUND

Section 7.2 indicates that potable water will pass through an ultra-filter before being stored in a 2,500-gallon bulk tank and then used to replenish a chlorinated 250 gallon pressure tank. A US Filter Water Boy® package plant is said to employ microfiltration and UV disinfection, but it is unclear how this package plant will interface with the ultrafiltration and chlorination system.

DATA REQUEST

156. Please provide a process flow diagram and description of how the Water Boy® package plant will interface with the UF and chlorination system. In the event of a power outage or potable water equipment failure please explain how sufficient pressurized water will be available to meet all plant safety showers and eyewash requirements in a worst-case scenario such as a chemical spill. Please verify that there will be sufficient chlorine contact time in light of the fact that a pressurized water tank's active volume is usually about half of its nominal volume.

Response: Below is the potable water system for the CPP. Depending upon the final selection of an Ultra Fine (UF) filter system a potable water packaged system such as the US Filter Water Boy © potable water system may (or may not) be required. There are UF systems that produce permeate which meet all the bacteria and virus removal requirements for the California Department of Health Services drinking water standards and would therefore not require additional treatment. Chlorination dosing would be regulated depending upon the analysis of the UF permeate (or a "Water Boy" system) and the potable water use rate to determine the proper dosage amount for the amount of contact time available.



Potable Water System

In order to ensure adequate supply to emergency shower/eye wash stations during a power loss situation, the pressurized water tank will be sized to provide the necessary pressure and flow to the stations at the lowest operating level of the pressurized tank. Final tank volume and flow requirements will be established in the detail design phase of the project to address these issues as they relate to the final plant potable water requirements under all operating modes and conditions.

BACKGROUND

Table 8.14-3 estimates effluent quality at 10 cycles of concentration and shows that silica, iron, copper, lead, manganese, mercury, silver, selenium, zinc, and other constituents could exceed the estimated effluent discharge limits. Temperature, trihalomethanes, chlorine, and biocide toxicity are other discharge concerns.

Section 7.1.5 describes the blowdown treatment as a clarifier where some of the metals are removed, with a final gravity sand separator used to reduce turbidity to less than 1

NTU before discharge. In similar applications, achieving low metals and turbidity has required different unit processes.

DATA REQUESTS

157. Clarifiers are very efficient at removing sand and silt particles, but effluent turbidity is most often caused by fine colloidal particles that are not readily removed by gravitational forces such as employed in a sand separator. Please explain the additional turbidity reduction benefit provided by the final sand separator described in 7.1.5.

    Response: After the NPDES limits have been established, the requirement for additional treatment of clarifier effluent can be reviewed. If it is established that additional reduction in NTU is required, then a sand filter is one of the optional methods available to achieve additional NTU reduction in clarifier effluent.

158. Please assess alternate cooling processes that will provide more effective cooling than a canal with a series of notched weirs described in Section 7.1.5. Will this canal terminate in a diffuser? How will dilution/mixing zones be used to determine permit requirements? What diffuser design parameters will ensure sufficient in-stream dilution?

    Response: Clay Creek is a relatively shallow stream with a broad surface area. As a result, the temperature in the stream is primarily a function of air temperature. The stream is cold during winter and hot during summer. Absent any controls, effluent in Clay Creek is estimated to equilibrate according to air and ground temperatures within approximately a mile. Substantial flow from the RSP discharge would also equilibrate instream temperatures. As noted in Section 8.14.3.1 of the AFC, Clay Creek is an ephemeral stream. Natural flows occur primarily as a result of winter rainfall events from November through March. As a result, mixing zones, diffusers and in-stream dilution are not likely to be permitted by RWQCB. The RWQCB currently requires that discharges meet a temperature of $\pm$ 5 degrees compared to ambient conditions when flow is present. SMUD believes the notched weir design will provide the necessary temperature and water quality benefits, and therefore is not seeking more effective cooling designs.

159. Please provide a range (min/ave/max) of anticipated make-up water constituents. If algae is a seasonal issue, how will this be managed?

    Response: SMUD generally relied on data available from EBMUD to determine that water quality was suitable for this use. The min/ave/max values as available are provided in Attachment W&SR-159. In addition to these data, SMUD collected an additional grab sample that is reported in Table 7.1-2 of the AFC. These are the best data available to our knowledge.

The amount of algae detected in FSC water is not sufficient to cause impacts to the proposed plant. Were algae to become a problem, there are adequate technologies for screening algae from entering the plant.

160. Please provide an explanation of the total and soluble fraction of each constituent of concern listed in AFC Table 8.14-3, and explain any internal/external removal mechanisms and the "end-of-pipe" treatment efficiency needed to assure that the "very stringent" effluent discharge criteria will be met. Please address "end-of-pipe" treatment alternatives, including, but not limited to; chemical treatment/ filtration, adsorption, selective ion exchange, wetland polishing, and membrane processes.

Response: The numerical criteria listed in Table 8.14-3 were extracted from (RWQCB, 2000) referenced in Chapter 8.14. This source describes for each constituent whether the criterion is for total or dissolved, which is equivalent for all practical purposes to "soluble." Generally criteria for metals are enforced by the dissolved fraction, but for practical purposes dischargers generally report "total." The sampling data in Table 8.14-3 are "total" concentrations.

If the CPP can meet all discharge requirements without active treatment such as chemical treatments or filtration, it will do so. At present, it appears that water quality is good enough to allow use without additional treatments. However if it is determined that additional treatment is necessary, it would be evaluated and implemented when required. An example would be arsenic removal through adsorption to ferric sulfate, leaving a solid residue that can be disposed in municipal landfill. However, no additional treatments are considered necessary at this time, based on water quality data presented here.

161. In other applications having very stringent discharge criteria, one or more alternatives to end-of pipe treatment have been utilized, including; zero-discharge, alternate cooling technologies (spray-enhanced dry or hybrid wet-dry), cooling loop side-stream filtration, alternate biological control (such as UV or ozone), higher cycles of concentration, and RO pretreatment of make-up water. Please assess these and any other alternatives that can assure compliance with projected discharge requirements.

Response: Each of these technologies could be implemented in the event that discharge criteria could not be met by reducing cooling cycles. However, there is a cost in efficiency, heat, and increased waste generation to each of these technologies that is opposite to the goals of SMUD in producing clean, reliable power at the least cost to the district ratepayers. Because these alternatives are not necessary, nor do current data indicate they will become necessary over the life of the plant, and because they do not meet the District objectives for efficiency, they were not further evaluated.

162. The San Joaquin River at Antioch is listed as an impaired waterway for the following constituents:

electrical conductivity	chlorpyrifos	Diazinon
Aldrin	dieldrin	Endrin
heptachlor	heptachlor epoxide	chlordane (total)
hexachlorocyclohexane (total)	DDT	endosulfan (total)
toxaphene	mercury	organic enrichment
Low dissolved oxygen	Unknown toxicity	

Are Clay Creek, Hadselville Creek, Laguna Creek, or the Cosumnes River known to contribute to the impairment caused by any of these constituents?

Response: SMUD does not know if and to what extent these streams may contribute to impairment of the San Joaquin River at Antioch for the listed constituents. However, the approximate flow of the Delta near Antioch is approximately 130,000 cfs. The outflow from CPP would be approximately 4 cfs (1,638 gpm * 2.228 x 10 –3 = 3.7 cfs). or 0.003% of the Delta outflow. Aldrin, heptachlor, hexachlorcyclohexane, toxaphene, chlorpyrifos, dieldrin, heptachlor epoxide, DDT, diazinon, endrin, chlordane and endosulfan are pesticides that are thought to originate primarily from agricultural practices which are not anticipated on the CPP site. Low dissolved oxygen is not a likely result of CPP as the water is cascaded through a cooling tower prior to discharge and therefore highly aerated. No organic materials would be introduced by the process, and the water originates from a generally low-organic source (American River). Therefore, organic enrichment is not anticipated.

Mercury primarily comes from natural outcrops of cinnabar and inactive mines or mine tailings, which are not part of the anticipated uses of the CPP site. Electrical conductivity is a measure of dissolved ions in water, including salt. All waters contain some dissolved ions, so the named creeks probably do contain these materials, but the San Joaquin River at Antioch is heavily influenced by agricultural tailwater flows from the San Joaquin. CPP is reducing the impacts of electrical conductivity by monitoring and controlling the quality of its discharge through a stringent RWQCB permit. The additional flows in Clay Creek and the Cosumnes River from the CPP may have beneficial impacts for the aquatic life of these rivers.

163. How will cooling loop and blow-down solids, chorine residual, and trihalomethanes be monitored and controlled?

Response: Final engineering design for this project has not been completed. However, it would be typical to monitor electrical conductivity using continuous monitoring devices to track electrical conductivity in the cooling tower, and adjust blowdown according to the quantity of solids implied by the conductivity. Chlorine residual is generally monitored with continuous

monitoring devices linked in-line with the discharge. Chlorine is generally controlled by injecting bisulfite or SO2 to dechlorinate prior to discharge.

Trihalomethanes are produced in trace amounts when waters high in humic acids (organic substances) are heavily chlorinated. Trihalomethanes have been identified as at least a theoretical concern in proposals to chlorinate waters drawn from the Delta that are high in suspended peat and other organic substances. The proposed water supply is very low in organic substrate and is unlikely to produce measureable trihalomethanes.

The RWQCB as part of its NPDES permit generally requires at least annual monitoring and reporting for a long list of California Toxics Rule and National Toxics Rule-listed chemicals, including trihalomethanes. SMUD anticipates this will apply to CPP also.

BACKGROUND

Recent RWQCB meetings with the applicant have shown that effluent discharge criteria will likely be more stringent than assumed in the AFC.

DATA REQUESTS

164. Table 8.14-3 needs to be updated to reflect the most recent estimate of NPDES effluent criteria. There are also data inconsistencies in the text and associated tables. Please verify which value is correct, or if qualifiers are needed to justify the use of different parameters. Please refer to the following table for specific data inconsistencies and requests:

Constituent	First Reference	Other References/Comment	Data Request	Data Response
Copper	Section 8.14.4.1 states that 19 mg/L copper is the only blowdown constituent requiring treatment and would be 10 mg/L after treatment in the clarifier system.	Section 8.14.4.1 predicts 10 mg/L effluent copper will exceed the 20ug/L predicted NPDES copper standard shown in Table 8.14.3 by 500 times. Table 8.14-4 shows 10-cycle drift to have 190ug/L copper.	How will NPDES criteria be achieved? since cooling water drift is the same as blow-down water prior to treatment, what is the correct copper value in the cooling loop?	SMUD believes the estimate of 19 mg/L copper is incorrect and is performing additional sampling to confirm the concentration. Data reported by EBMUD indicate average copper around 4 µg/L. If confirmed, then water treatment will be necessary to meet discharge limits.

Constituent	First Reference	Other References/Comment	Data Request	Data Response
Nitrate	Table 7.1.2 indicates that raw water will have 30 ug/L nitrate	Table 8.14-3 & 8.14-4 predicts 10 cycle blowdown nitrate will be non-detect.	What is the nitrate removal mechanism?	CPP will add no nitrogen to the process water, and the discharge criterion, (if any) would probably be in the range of 10,000 µg/L. It is unlikely effluent would discharge at this concentration
Phosphate	Table 7.1.2 indicates that raw water will have 25 ug/L phosphate	Table 8.14-3 & 8.14-4 predicts 10 cycle blowdown will be non-detect.	What is the phosphate removal mechanism? Won't the phosphate compounds added as RO and cooling loop scale inhibitors add to phosphate levels?	Tables 8.14-3 and 4 focus on the toxic and likely limiting water quality parameters. The RWQCB doesn't generally list phosphate, but we anticipate the criterion (if any) would be around 100 µg/L. Scale inhibitors containing no phosphates are available if CPP needs them to meet effluent limits.
Silica	Table 7.1.2 indicates that raw water will have 12 mg/L silica.	Table 8.14-4 predicts 10 cycle blowdown will have 120 mg/L silica.	What silica forms are expected, and how will silica scaling be managed?	Silica occurs in dissolved and colloidal forms and would be managed with anti-scaling chemicals as listed in Table 8.12-2.
TDS	Table 7.1.2 indicates that raw water will have 47 mg/L average TDS	Table 7.1-3 indicates that 10 cycle blow-down will have 470 mg/L TDS. Section 7.1.6 indicates that ave/max TDS will be 250/150 for 3 cycles of concentration, and 250/500 for 10 cycles of concentration, respectively.	Please explain how the 3 cycle maximum value can be lower than average and how the average TDS for these two scenarios are the same. Please provide the basis and specific ion balance for each scenario. Won't there be additional TDS from sulfuric acid and chemical addition?	Section 7.1.6 has reversed numbers. Ave/Max TDS at 3 cycles is 150/250 µg/L.
Chromium, Hexavalent	Table 7.1.2 indicates that raw water will have 52 ug/L chrome.	Table 8.14-3 states that 10 cycle blowdown will be 10 ug/L. Table 8.14-4 estimates 10 cycle cooling water at 23 ug/L chrome.	Which is correct? What mechanism prevents a 10x chromium concentration above the raw water? The raw water and latter value above exceed the estimated NPDES criteria of 11 ug/L.	The correct value for Table 7.1-2 is 5.2 µg/L. EBMUD data report a value of 2.6 µg/L. Depending on actual concentration during operation, some additional treatment may be required.
Iron	Table 7.1.2 indicates that raw water will have 99 mg/L.	Table 8.14-3 predicts a 10 cycle blowdown of 990 ug/L, which is below estimated NPDES criteria of 1,000 ug/L, but well above the secondary MCL of 300ug/L.	Won't additional iron be added from corrosion? What is the basis for the predicted criteria?	If the RWQCB applies a criterion of 300 µg/L for Iron, additional treatment may be necessary.

Constituent	First Reference	Other References/Comment	Data Request	Data Response
Lead	Table 7.1.2 indicates that raw water will have 2.8 mg/L.	Table 8.14-3 states that 10 cycle blowdown will average 25 ug/L. Table 8.14-3 states that NPDES effluent criteria will be 25 mg/L, but the MCLG for lead is 0 mg/L.	Why isn't this 28 mg/L, or 10x raw water? Is the NPDES criteria accurate? What contingency is available if the raw water lead is higher than anticipated?	The plant will operate to meet the NPDES criteria specified in the NPDES permit. This can be achieved by reducing the number of cycles or potentially through additional treatment.
Manganese	Table 7.1.2 indicates that raw water will have 22 ug/L	Table 8.14-3 states that 10 cycle blowdown will be 100 ug/L, which equals estimated NPDES criteria of 100 ug/L. Table 8.14-4 estimates 10 cycle cooling water will have 22 ug/L.	Why isn't the cooling loop 220ug/L, or 10x concentration above the raw water?	The plant will operate to meet the NPDES criteria specified in the NPDES permit. This can be achieved by reducing the number of cycles or potentially through additional treatment.
Zinc	Table 7.1.2 indicates that raw water will have 43 ug/L.	Table 8.14-3 states that 10 cycle blowdown will be 60 ug/L, which equals estimated NPDES criteria of 60 ug/L. Table 8.14-4 estimates 10 cycle cooling water will have 43 ug/L.	What mechanism prevents a 10x concentration above the raw water? Won't zinc also be added from galvanized metals?	Table 8.14-3 is incorrect in specifying 60 µg/L as the numerical criterion. The correct number is 110 µg/L. The plant will operate to meet the NPDES criteria specified in the NPDES permit. This can be achieved by reducing the number of cycles or potentially through additional treatment. The purpose of cooling tower treatment chemicals is (in part) to minimize corrosion from galvanized metals, and therefore, we expect no significant additions for corrosion.
Total Alkalinity, as CaCO3	Table 7.1.2 indicates that raw water will have 28 mg/L	Table 7.1-3 indicates that 10 cycle blow-down will have 328 mg/L. Table 8.14-3 states that 10 cycle blowdown will have 351 mg/L. Table 8.14-4 estimates 10 cycle cooling water will have 280 mg/L.	Which is correct, and won't the planned acid addition reduce alkalinity to well below 10x raw water?.	For purposes of the estimates provided 328, 351 and 280 are all reasonable estimates. CaCO3 will probably not be the limiting criterion. The estimates at this time are conservative in assuming no reduction by acid addition.
Turbidity/ TSS	Table 8.14-3 states that 10 cycle blowdown will have <1 Turbidity and <20 TSS.	Table 8.14-3 states that NPDES effluent criteria will be <1 Turbidity.	Why isn't the ratio of turbidity/ TSS @ 1? How will these criteria be reliably achieved with only clarification?	The plant will operate to meet the NPDES criteria specified in the NPDES permit. The treatment necessary to meet the criteria will be finalized after RWQCB identifies the criteria.

Constituent	First Reference	Other References/Comment	Data Request	Data Response
Oil and Grease	Table 8.14-3 states that 10 cycle blowdown will be non-detect. The literature suggests that oil/ water separator effluent is normally 10-20 mg/l dissolved oil.	Table 8.14-3 estimates that NPDES effluent criteria will be 10 mg/L, but most recreation, shellfish, drinking water, and fishery standards require <2 mg/L	Is the NPDES criteria accurate?	The RWQCB will determine the effluent criteria, and CPP will design appropriate water treatment to meet it. There is no introduction of oil to cooling water under current plans.
Chlorine Residual	Table 8.14-3 states that blowdown will be 0.01 mg/L (after dechlorination)	Table 8.14-3 states that NPDES effluent criteria will be 0.002 mg/L, which is far lower than Table 8.14-3's estimated residual	How will the chlorine residual be held consistently below the NPDES criteria?	Dechlorination commonly is done by injection of S02. The plant will be designed to meet effluent criteria set by the RWQCB.

Response: SMUD believes Table 8.14-3 reflects the most recent estimate of effluent criteria. It is important to recognize that authority to implement effluent criteria is the responsibility and authority of the RWQCB and EPA. SMUD has used current guidance from the RWQCB and recent NPDES permits to estimate these values, but the RWQCB could apply higher or lower concentration limits than those listed.

With respect to inconsistencies, CEC staff has incorrectly attempted to directly link data from two different tables in Section 7 and Section 8.14. The purposes and uses of each table are different although the water quality data used to derive this information is the same.

Table 7.1-1 represents combined data from EBMUD and a grab sample collected from Folsom South Canal. These data are estimates of the water quality in Folsom South Canal. Table 8.14-3 presents these same water quality data, and the estimated effluent criteria that would be applied by the RWQCB. CPP estimates that the towers would operate between 3 and 10 cycles of concentration, with the highest concentration.

165. Section 8.14.4.1 states that antiscalants and anti-fouling chemicals will be added to the cooling water but fails to provide toxicity or LD_{50}. These chemicals could affect effluent toxicity. Will whole effluent toxicity studies be conducted on cooling tower blow-down or low volume cleaning wastes? If not, explain why.

Response: Cooling tower treatment chemicals are generally long-chain polymers that contain no heavy metals or substances that would be toxic to aquatic organisms. Two frequently used vendors are Betz and Nalco. Several Nalco products are listed in the AFC in Table 8.12-2. Toxicity thresholds are reported to be very high by these companies. The intended use if for water that will be discharged, and therefore, they are required to be non-toxic.

Effluent and monitoring requirements are the responsibility and authority of the RWQCB, who determine required tests after evaluating the potential for toxicity and adverse effects to beneficial uses. No permit has been issued at this time, and the Applicant is not the appropriate party to advise CEC on why certain tests are included. The RWQCB generally requires 3-species acute or chronic toxicity testing as part of an NPDES permit.

Attachment W&SR-116

November 26, 2001 "Will Serve" Letter

Attachment W&SR-133

Calculation Cover Sheet

PB Power *303 Second Street, Suite 700 North*
San Francisco, CA 94107
415-281-8700
Fax: 415-281-8707

project:	Cosumnes Power Plant	***job no.:***	13561	***discipline:***	Civil
subject:	Drainage Volumes and Areas			***calculation no.:***	13561-C-1
originator:	L. Gasparetti	***date:***	7/26/01	***file no.:***	
checker:		***date:***		***Sheet*** 1 ***of*** 5 ***Sheets***	

Purpose of Calculation

Determine the detention pond storage volume required to contain the total runoff from a 10-year, 24-hour storm.

Summary of Results and Conclusions Starts in Sheet No. _

Sources of Design Criteria

Sources of Formula and References:

FR-1 Rainfall Depth Duration Frequency for Eagles Nest (Department of Water Resources)
FR-2 Plot Plan, Drawing No. G1, Rev. by PB Power

Record of Issues

No.	Description	By	Date	Checked	Date	Approved	Date	Date Filmed

Preliminary Calculation	**x**	**Committed Preliminary Design Calculation**	
Superseded Calculation		**Final Calculation**	

Purpose of Calculation					
project:	Cosumnes Power Plant	***job no.:***	13561	***discipline:***	Civil
subject:	Drainage Volumes and Areas			***calculation no.:***	13561-C-1
originator:	L. Gasparetti	***date:***	7/26/01	***file no.:***	
checker:		***date:***		***Sheet*** 2 ***of*** 5 ***Sheets***	

A. PURPOSE

See cover sheet.

B. METHODOLOGY

1. The Rational Method determines the peak runoff:
   Q = CiA, where
   Q = peak runoff (cfs)
   C = runoff coefficient
   i = rainfall intensity (in/hr) (based on time of concentration)
   A = contributing area (acres)
2. Modify the rational method by using the rainfall depth for the 24-hour event to determine "i" rather than a shorter time period based on the time of concentration. This will yield a volume which is more realistic than using a higher intensity and assuming the storm maintains that intensity over a 24 hour period.

C. DESIGN CRITERIA

1. Use 10-yr frequency, 24-hour storm.
2. Runoff coefficient, C:
   C = 0.30 for crushed rock surfacing, landscaped, and undeveloped areas
   C = 0.75 for compacted earth
   C = 0.90 for paving and roofs
3. Rainfall intensity for 10-year, 24-hr storm, i:
   Rainfall depth = 2.60 in/24-hr (FR-1)
   Therefore, i = 0.11 in/hr
4. Storage volume required is the difference between the runoff from the developed site minus the runoff from the undeveloped site.

D. SUMMARY

Required volume for detention pond is 100,000 cubic feet.

E. AREAS

1. Total site:
   $A_T = 25.2$ ac
2. Paved areas, A_P:
   $A_p = 13.5$ ac
3. Crushed rock areas, A_{CR}:
   Switchyard: $A_{CR} = 6.2$ ac
4. Landscaped areas, A_L:
   Entrance: $A_L = 1.1$ ac
5. Compacted earth, A_E
   Cooling towers: $A_{E1} = 2.8$ ac
   O/W Separator: $A_{E2} = 0.7$ ac
   Gas Metering Station: $A_{E3} = 0.9$ ac

$A_E = A_{E1-3} = 4.6$ ac

F. RUNOFF COEFFICIENTS

For developed site, C_{DEV}:

A_T, $C_{DEV} = X$
A_P, $C = 0.90$
A_{CR}, $C = 0.30$
A_L, $C = 0.30$
A_E, $C = 0.75$

$C_{DEV} = [0.9(13.5) + 0.3(6.2+1.1) + 0.75(4.4)]/25.2 = 0.70$

For undeveloped site, C_{UDEV}: $A_T = 25.2$ ac, $C = 0.30$

G. VOLUME OF RUNOFF

From developed site, Q_{DEV}:

$Q_{DEV} = CiA = 0.70(0.11)(25.2) = 1.94$ cfs

For 24-hour duration:

$V_{DEV} = (1.94\ ft^3/sec)(3600\ sec/hr)(24\ hr) = 167{,}616\ ft^3$

From undeveloped site, Q_{UDEV}:

$Q_{UDEV} = CiA = 0.3(0.11)(25.2) = 0.83$ cfs

For 24-hour duration:

$V_{UDEV} = (0.83\ ft^3/sec)(3600\ sec/hr)(24\ hr) = 71{,}712\ ft^3$

H. VOLUME OF DETENTION POND, VPOND:

$V_{POND} = V_{DEV} - V_{UDEV} = 167{,}616 - 71{,}712 = 95{,}904\ ft^3$, say $100{,}000\ ft^3$

A00 H Eagles Nest SC

source: FR-1
Calc. No. 13561-C-1

Rainfall Depth Duration Frequency for Eagles Nest

Date: 7/26/01
sht. 4 of 5

DWR # A00 2160 34
Analysis By DWR DLA
Data From : DWR, Sac Co Sta # 269

Sacramento County

TB 340:B-3

Latitude 38.485°
Longitude -121.260°
Elevation 100 Feet

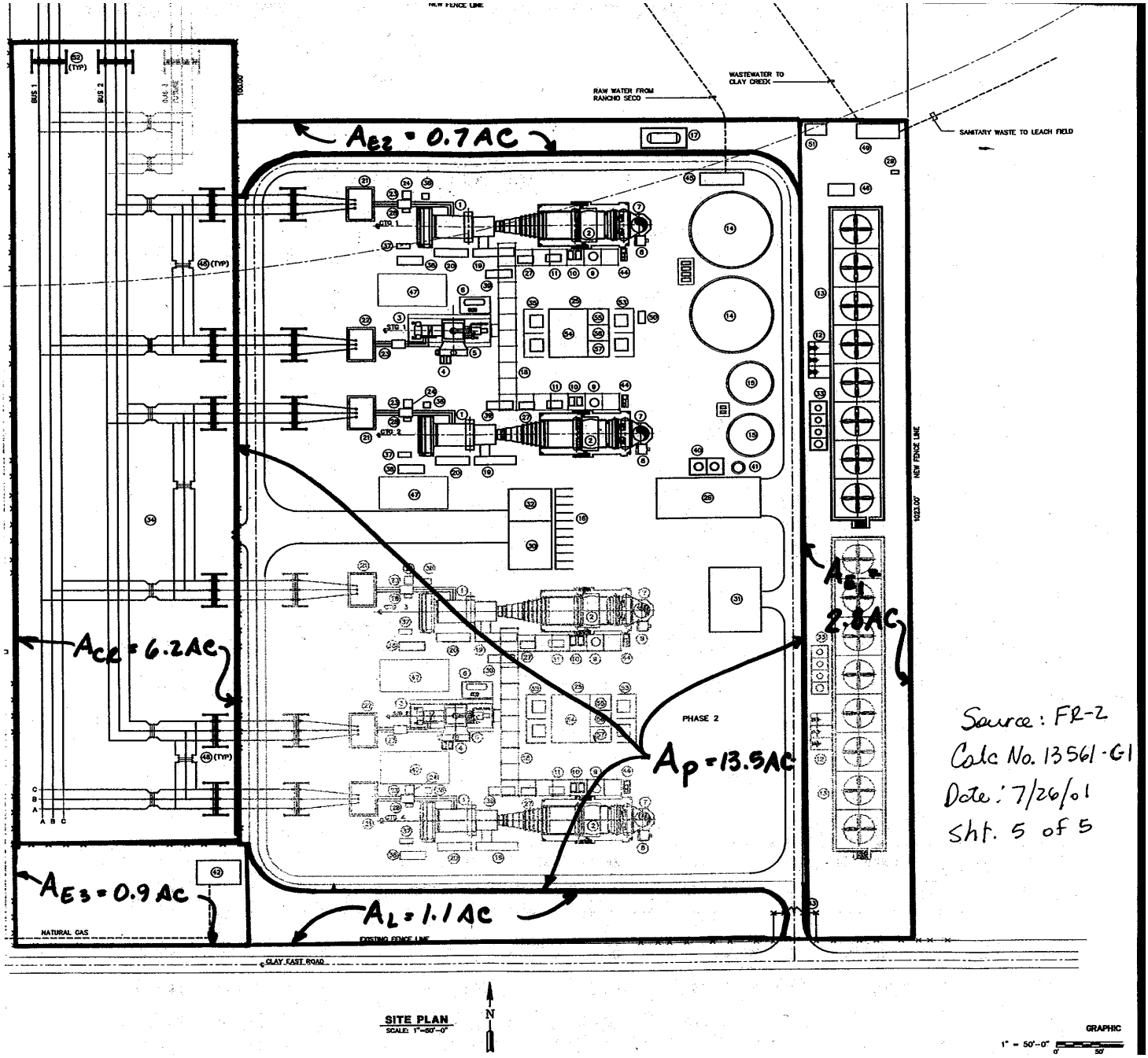
Maximum Rainfall For Indicated Number Of Concecutive Days

	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	12 Hr	1 Day	2 Day	3 Day	F Yr
1976			0.20	0.34	0.44	0.58	0.83	0.95	0.98	0.98			6.08
1977			0.15	0.24	0.30	0.36	0.39	0.55	0.71	0.82			5.89
1978					0.52	0.97	1.04	1.19	1.32	1.87			21.71
1979			0.13	0.17	0.27	0.43	0.58	0.88	1.03	1.20			15.72
1980			0.40	0.60	0.80	1.13	1.23	1.38	1.51	1.54			21.86
1981	0.05	0.09	0.14	0.18	0.29	0.47	0.61	0.93	1.25	1.64			12.43
1982			0.10	0.15	0.30	0.38	0.51	0.84	1.00	1.47			28.04
1983	0.15	0.20	0.20	0.35	0.65	0.90	1.10	1.40	1.78	2.73			35.89
1984	0.10	0.20	0.30	0.45	0.70	1.04	1.25	1.39	1.95	2.63			19.04
1985	0.06	0.12	0.18	0.36	0.56	0.74	0.91	1.01	1.31	1.32			10.99
1986	0.12	0.20	0.24	0.35	0.51	0.79	1.02	1.61	1.97	2.20	4.02	5.16	16.97
1987	0.04	0.08	0.12	0.24	0.28	0.39	0.47	0.71	1.18	1.73	1.77	2.01	12.01
1988	0.04	0.12	0.16	0.31	0.47	0.55	0.83	1.14	1.85	2.28	2.40	2.40	13.23
1989	0.08	0.16	0.16	0.24	0.39	0.47	0.59	0.79	1.02	1.14	1.50	1.73	14.69
1990	0.16	0.20	0.24	0.31	0.47	0.71	0.87	1.06	1.30	1.30	1.57	1.65	15.00
1991	0.20	0.24	0.24	0.24	0.43	0.63	0.91	1.30	1.57	1.57	1.85	2.68	14.91
1992	0.12	0.20	0.24	0.35	0.59	0.87	1.06	1.46	1.61	1.69	2.32	2.99	15.36
1993	0.16	0.20	0.28	0.28	0.47	0.51	0.63	0.79	1.38	1.81	2.28	0.20	16.45
1994	0.16	0.20	0.24	0.35	0.47	0.59	0.91	1.14	1.18	1.18	1.42	2.42	10.04
1995	0.28	0.47	0.59	0.87	1.02	1.26	1.65	1.97	2.24	2.60	3.03	3.58	26.06
1996	0.16	0.28	0.35	0.63	0.75	1.06	1.14	1.38	5.10	1.97	3.03	3.31	20.86
1997	0.24	0.31	0.31	0.51	0.91	1.18	1.42	1.57	1.85	2.44	2.87	3.31	21.50
1998	0.12	0.16	0.16	0.31	0.43	0.71	0.94	1.46	2.13	2.87	3.50	3.82	31.11
1999	0.08	0.12	0.16	0.20	0.43	0.75	0.98	1.22	1.22	1.38	1.54	2.52	15.36
2000													
Average	.13	.20	.23	.35	.52	.73	.91	1.17	1.60	1.77	2.36	2.70	17.55
Stdev	.07	.09	.11	.17	.20	.27	.31	.34	.85	.59	.82	1.17	7.36
Rec Max	.28	.47	.59	.87	1.02	1.26	1.65	1.97	5.10	2.87	4.02	5.16	35.89
Rec Min	.04	.08	.10	.15	.27	.36	.39	.55	.71	.82	1.42	.20	5.89
Z	3.33	3.93	4.45	4.24	2.75	2.08	2.30	1.94	6.21	1.78	.52	.39	3.37
Yrs Rec	18	18	23	23	24	24	24	24	24	24	14	14	24
CV	.523	.463	.477	.484	.385	.373	.339	.287	.529	.332	.347	.435	.419
Reg CV	.352	.352	.352	.352	.352	.352	.352	.352	.352	.352	1.352	2.352	.310
alc Skew	.6	1.6	1.8	1.6	1.0	.4	.4	.3	3.2	.4	.6	.0	.8
Reg Skew	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.4
FIC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RP 2	.12	.18	.22	.33	.49	.68	.85	1.10	1.50	1.65	1.79	1.56	17.19
RP 5	.16	.25	.29	.44	.65	.92	1.15	1.48	2.02	2.23	4.75	7.43	21.99
RP 10	.19	.29	.34	.51	.76	1.07	1.34	1.72	2.36	2.60	6.65	11.21	24.72
RP 25	.22	.34	.40	.60	.90	1.26	1.57	2.02	2.77	3.05	8.97	15.81	27.78
RP 50	.25	.38	.44	.67	.99	1.39	1.74	2.24	3.06	3.37	10.63	19.11	29.85
RP 100	.27	.41	.48	.73	1.08	1.52	1.90	2.44	3.34	3.68	12.23	22.29	31.78
RP 200	.29	.45	.52	.79	1.17	1.64	2.06	2.65	3.62	3.99	13.79	25.39	33.59
RP 500	.32	.49	.57	.87	1.29	1.81	2.26	2.91	3.98	4.38	15.84	29.46	36.00
RP 1000	.34	.52	.61	.92	1.37	1.93	2.41	3.10	4.24	4.67	17.30	32.36	37.49
RP 10000	.41	.63	.73	1.11	1.65	2.31	2.90	3.72	5.09	5.61	22.13	41.96	42.56

JDG

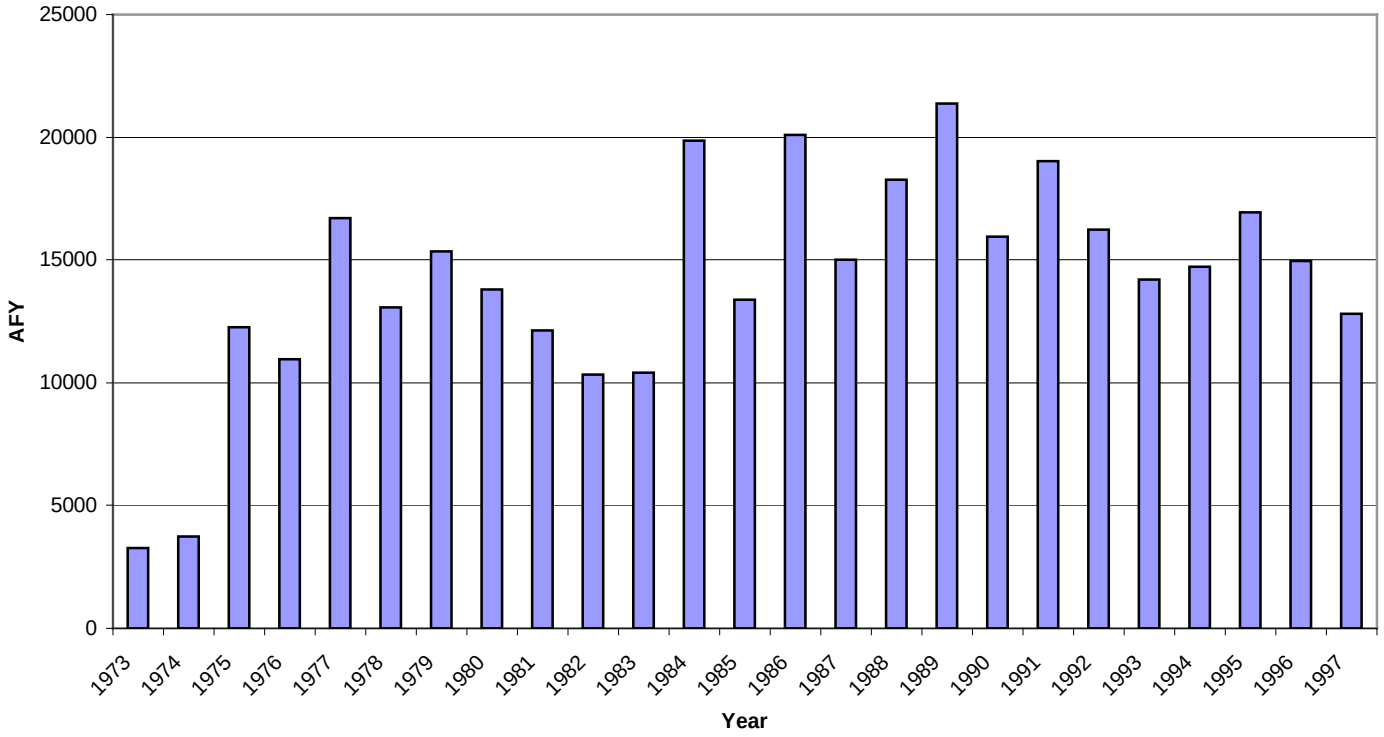
Page 1

6/1/01


NEW FENCE LINE
RAW WATER FROM RANCHO SECO
WASTEWATER TO CLAY CREEK
SANITARY WASTE TO LEACH FIELD
A_{E2} = 0.7AC
A_{CL} = 6.2AC
A_{E1} = 2.8AC
A_P = 13.5AC
A_{E3} = 0.9 AC
A_L = 1.1 AC
PHASE 2
NATURAL GAS
EXISTING FENCE LINE
CLAY EAST ROAD
NEW FENCE LINE
SITE PLAN
SCALE: 1"=50'-0"
N
GRAPHIC
1" = 50'-0"
Source: FR-2
Calc No. 13561-G1
Date: 7/26/01
Sht. 5 of 5

INSERT FIGURE W&SR-150

FIGURE W&SR-151
Water Use at RSP



Attachment W&SR-159

EBMUD American River Diversion Analysis